



ADVANCED AIRFIELD & ATC SYSTEMS FOR CIVIL & DEFENCE AVIATION

Communication • Navigation • Surveillance • ATC • Weather Solutions



VOICE COMMUNICATION AND CONTROL SYSTEM (VCCS)

The VCCS is an advanced IP-based communication system designed for Air Traffic Control (ATC) and Command Centers. It provides secure, reliable, and efficient voice communication between controllers and pilots, supporting both fixed and mobile operations. Engineered for mission-critical environments, it ensures uninterrupted, high-quality communication through modular redundancy and full compliance with international aviation standards.

KEY FEATURES

- ✓ **Modular & Expandable:** COTS-based design supporting easy upgrades and future expansion.
- ✓ **Standards Compliance:** Meets ICAO and EUROCONTROL standards (ED-136, 137, 138, 153).
- ✓ **Smart Management:** Web-based configuration, monitoring, and user access control.
- ✓ **Controller Working Positions:** Intuitive touch display, configurable interface, and low power operation.
- ✓ **High Reliability:** Redundant architecture with dual networks, hot-swappable modules, and power backups for 24x7 uptime.
- ✓ **Serverless Design:** Cost-effective, scalable solution eliminating single points of failure.
- ✓ **Seamless Connectivity:** Supports VHF, HF, VoIP, analog radios, VoIP/Analog telephone for versatile communication.
- ✓ **Interface functions:** E&M, FXS, FXO, LB, ISDN, E1 / T1, ATSR2/No.5, ATS-QSIG, etc.
- ✓ **Option:** MIL-STD-810H solution.



Headset



Handset



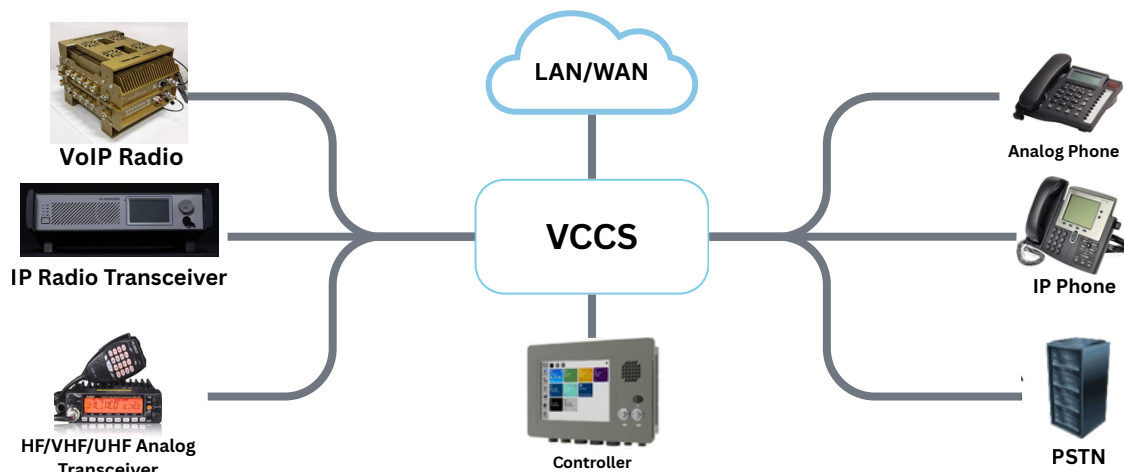
Foot PTT



Microphone



KEY COMPONENTS

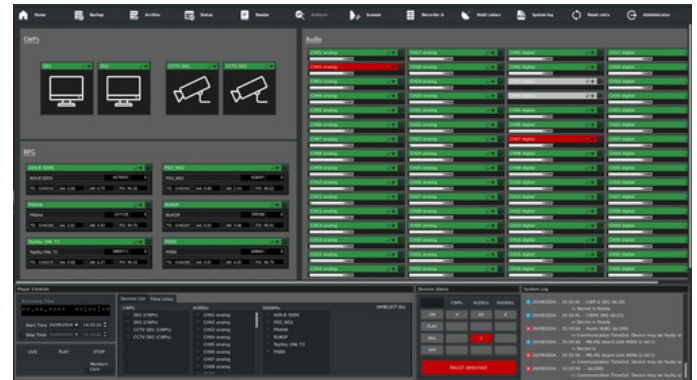


DIGITAL VOICE AND DATA RECORDER (DVDR)

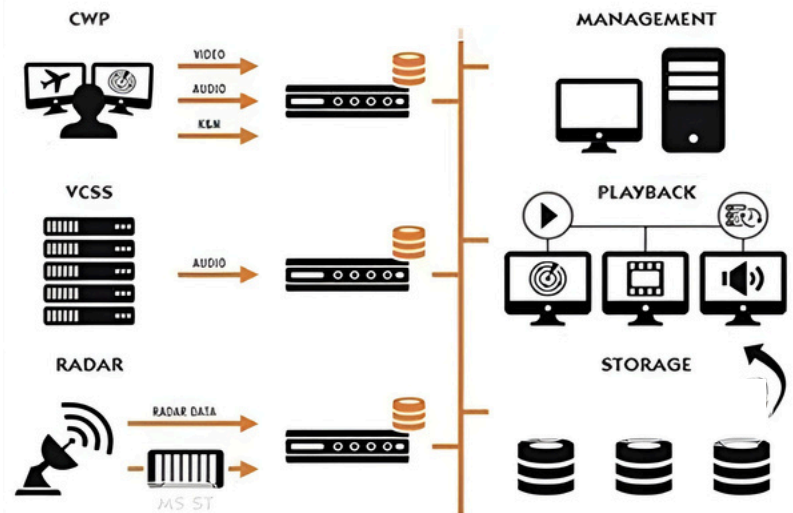
The Digital Voice and Data Recorder (D-VDR) is a network-based recording solution designed for Air Traffic Management in civil and defence environments. It provides secure, reliable acquisition, storage, playback, and analysis of voice, video, radar, and data streams. Built on a distributed, redundant architecture, the system integrates seamlessly with existing communication infrastructure and ensures ICAO-compliant recording and evaluation for mission-critical ATC operations.

KEY FEATURES & SPECIFICATIONS

- ✓ High-availability, network-based architecture.
- ✓ Recording framework aligned with ICAO Annex 10, 11, and 13 recommendations.
- ✓ Multi-source capture: VHF radios, VoIP/SIP, telephony, video, radar, ADS-B.
- ✓ Broad protocol support: Analog, TDM, VoIP (ED-137), SIP, RTP.
- ✓ Encrypted, non-streaming data acquisition for secure and efficient operation.
- ✓ Advanced multi-channel playback with graphical scenario visualization.
- ✓ Variable playback speeds with enhanced audio clarity
- ✓ Real-time system monitoring and supervisory control
- ✓ High-performance local SSD storage with scalable NAS/SAN expansion.
- ✓ Secure web-based interface with role-based access and full audit trails
- ✓ Compact 19" rack-mounted system with redundant power supply.



RECORDING SYSTEM



KEY HIGHLIGHTS

- ✓ **ICAO-Compliant ATC Recording Platform** for civil and defence air traffic environments.
- ✓ **Mission-Critical Reliability** engineered for uninterrupted, 24x7 operations.
- ✓ **Complete Situational Capture** across voice, video, radar, and data streams.
- ✓ **Precision Incident Reconstruction** with synchronized, timeline-based replay.
- ✓ **Secure, Non-Streaming Architecture** ensuring data integrity and network efficiency.
- ✓ **Seamless ATC Integration** with radios, VCS, PBX, and IT infrastructure.
- ✓ **Intuitive Operator Experience** minimizing training effort.
- ✓ **Built for Long-Term Operational Confidence.**

AUTOMATIC WEATHER OBSERVATION SYSTEM (AWOS)

The Automatic Weather Observation System (AWOS) is a high-precision, fully automated meteorological solution designed to enhance airfield safety and operational efficiency. It continuously monitors and reports critical weather parameters in real time, enabling accurate weather assessment and informed decision-making for Air Traffic Control (ATC). Engineered for rugged, mission-critical environments, AWOS delivers reliable, uninterrupted performance across all weather conditions, supporting safe and efficient flight operations.



KEY COMPONENTS



TEMPERATURE AND HUMIDITY



ATMOSPHERIC PRESSURE



DATA LOGGER



LIGHTNING DETECTION



CAMERA



WIND SPEED AND DIRECTION



Ceilometer



PRECIPITATION



SOLAR RADIATION



RUNWAY SURFACE CONDITION

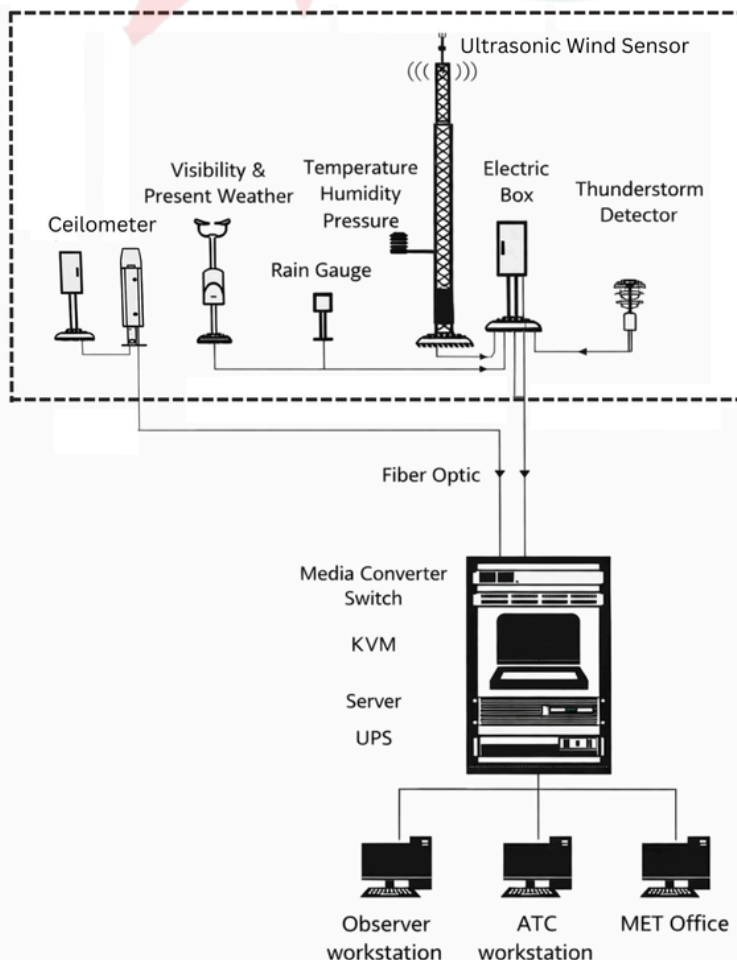


METEOROLOGICAL DISPLAY

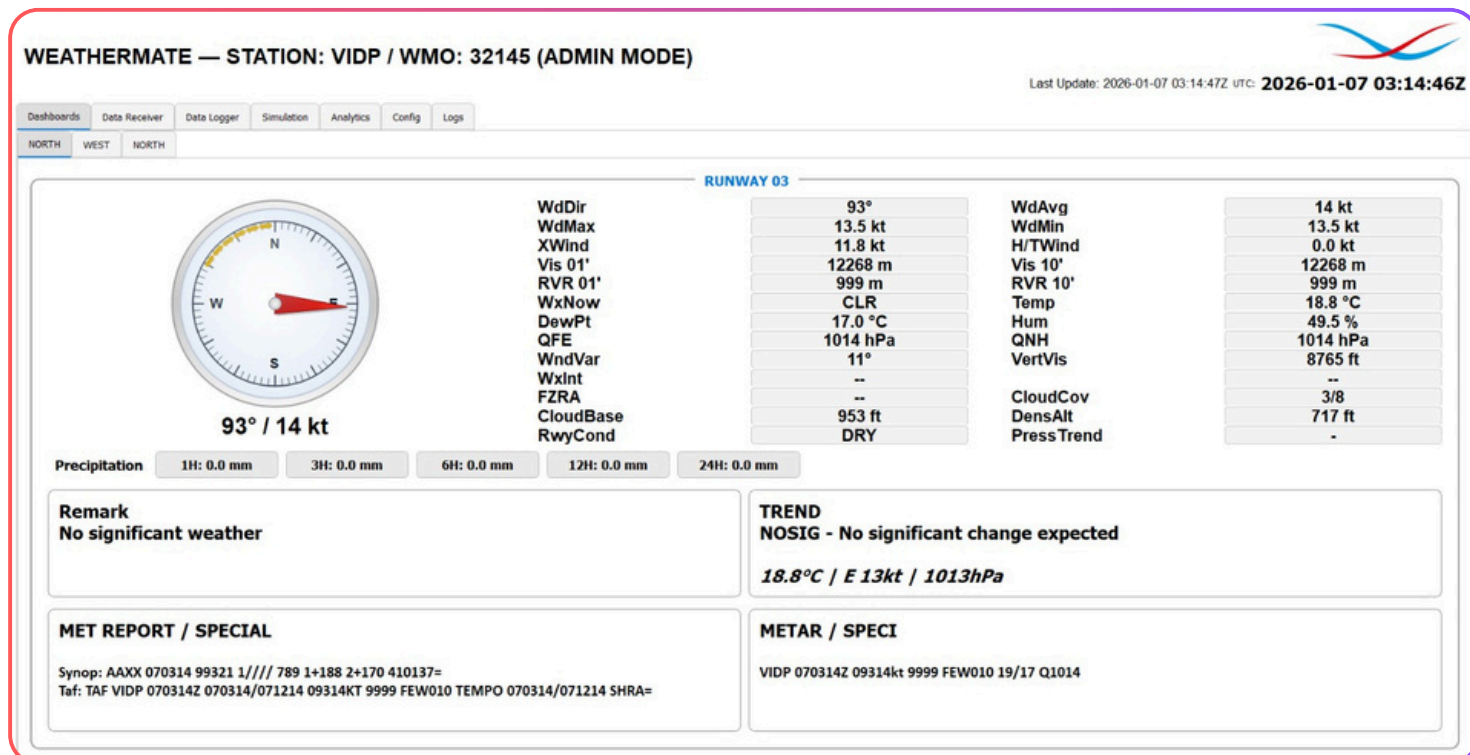


VISIBILITY AND PRESENT WEATHER

SYSTEM ARCHITECTURE



AWOS DISPLAY



KEY FEATURES

- ✓ **Fully Automatic Operation:** Autonomous, highly reliable system ensuring continuous performance for mission-critical airfield operations.
- ✓ **Standards Compliant:** Designed in accordance with ICAO and WMO standards for global interoperability.
- ✓ **User Interface & Remote Access:** Intuitive GUI for real-time monitoring, control, and secure remote access.
- ✓ **Modular & Scalable Design:** Configurable architecture to meet site-specific and operational requirements.
- ✓ **Data Editing & Validation:** Authorized manual input and correction to maintain accurate meteorological records.
- ✓ **System Integration:** Seamless interfacing with ATC, AFTN/AMHS, decision-support, and defence networks.
- ✓ **Monitoring & Alerts:** Continuous system and weather monitoring with automatic hazardous weather alerts.
- ✓ **Aviation Weather Outputs:** Automatic generation and distribution of METAR/SPECI and MET REPORT/SPECIAL bulletins.
- ✓ **Data Storage:** Secure, redundant, time-indexed historical weather database for analysis and reporting.
- ✓ **Rugged 24x7 Operation:** Industrial-grade design for continuous operation in harsh environmental conditions.

AIRCRAFT MONITORING SYSTEM

The Aircraft Monitoring System is a camera-based solution designed to provide continuous visual monitoring of aircraft operations across runways, taxiways, aprons, and other critical airside areas. It enables real-time observation of aircraft movements, take-offs, landings, and ground activities, supporting safe, efficient, and well-coordinated airport and airbase operations. By enhancing situational awareness and operational visibility, the system functions as a reliable visual management layer for civil airports, heliports, and high-security military airbases, delivering effective performance in all environmental conditions.



KEY FEATURES

- ✓ **Full HD long-range PTZ surveillance** with 30× optical zoom, HDR, defog, image stabilization, 500 m IR, and 360° pan for continuous airside and perimeter monitoring.
- ✓ **Edge-based intelligent video analytics** enabling geofencing, zone intrusion, loitering, line-crossing, people/vehicle/aircraft detection, traffic incidents, and auto-tracking.
- ✓ **Mission-critical outdoor design** with IP67, impact resistance, extreme-temperature operation, high vibration tolerance, integrated wiper, and high MTBF for 24×7 use.
- ✓ **Aviation-compliant deployment** supporting ICAO frangible masts, flexible mounting, and runway-adjacent installations.
- ✓ **Secure, efficient, and scalable system** with H.265 intelligent streaming, edge recording, encrypted communications, ONVIF integration, redundant power (High-PoE/24 VAC), and future expandability.



KEY HIGHLIGHTS

- ✓ **Provides 24×7 visual management of aircraft and airside operations**, enabling real-time monitoring of runways, taxiways, aprons, and other critical areas.
- ✓ **Supports safe and efficient take-off, landing, and ground movement operations** through clear visual oversight of aircraft and airside traffic.
- ✓ **Enhances situational awareness for airside operations and security teams**, supporting faster and more informed decision-making.
- ✓ **Designed for civil airports, heliports, and high-security military airbases**, meeting mission-critical operational and security requirements.
- ✓ **Operates reliably in day, night, and adverse weather conditions**, ensuring continuous monitoring availability.
- ✓ **Acts as a scalable visual decision-support layer**, improving coordination between airside operations and security teams while supporting future system expansion.



PORTABLE TRACKING SYSTEM

Portable Tracking System is a rapidly deployable surveillance solution providing real-time tracking and situational awareness for military aviation and helicopter operations. Designed for remote, high-terrain, and electronically contested environments, it ensures reliable performance even in GNSS-denied and GPS-jammed conditions. Built on ADS-B or SDR technologies with optional INS integration, the system delivers secure, continuous tracking for mission-critical defence operations.

KEY ADVANTAGES



Situational Awareness

Improves awareness in remote areas.



Enhanced Safety

Enhances safety with position alerts.



Cost Savings

Reduces reliance on radar.



QUICK COMPARISON

PARAMETER	OPTION 1: ADS-B	OPTION 2: V/UHF + INS
Frequency Based	1090 Mhz	Military V/UHF
GNSS-Denied Operation	Not Supported	Fully Supported
Anti-jamming Capability	Low	Very High
Military Suitability	Moderate	Mission-Critical
Terrain Suitability	Limited	Excellent

RECEIVER CAPABILITIES



Military Grade

Ruggedized, environmentally qualified for harsh conditions. MIL-STD 810G and 461E compliant.



Superior Range

200 NM range with near-theoretical receiver sensitivity better than -90 dBm.



Real-Time Processing

Low latency, 1Hz update rate, RTCA DO-260B compliant with dual-channel reception.



Customizable

Hardware and software customization for specific use cases. Software upgrade support

KEY FEATURES

- ✓ **Rapid Deployment:** Portable, lightweight system for quick setup in remote and tactical environments.
- ✓ **Dual Tracking Options:** ADS-B (1090 MHz) and encrypted V/UHF SDR with optional INS for GNSS-denied operations.
- ✓ **Anti-Jamming Capability:** Reliable tracking in GPS-jammed and electronically contested scenarios.
- ✓ **Secure Architecture:** Encrypted airborne transponders and protected ground infrastructure.
- ✓ **Real-Time Situational Awareness:** Live aircraft position display at ATC and command centers.
- ✓ **Scalable Ground Network:** Single or multiple ground receiver stations with centralized monitoring.
- ✓ **Military-Grade Reliability:** Designed for high-terrain, no-radio-coverage, and all-weather operations.

KEY HIGHLIGHTS

- ✓ **Mission-Ready in Hours** – Rapidly deployable for field and emergency operations.
- ✓ **Operates Without GNSS** – INS-based tracking for GPS-jammed environments.
- ✓ **Encrypted Military-Grade Links** – Secure V/UHF SDR communications.
- ✓ **Virtual Secondary Radar** – Continuous helicopter tracking in high terrain.
- ✓ **Real-Time Command Visibility** – Live situational awareness at ATC & command centers.
- ✓ **Tactical & Scalable** – Single or multi-station deployment based on mission needs.

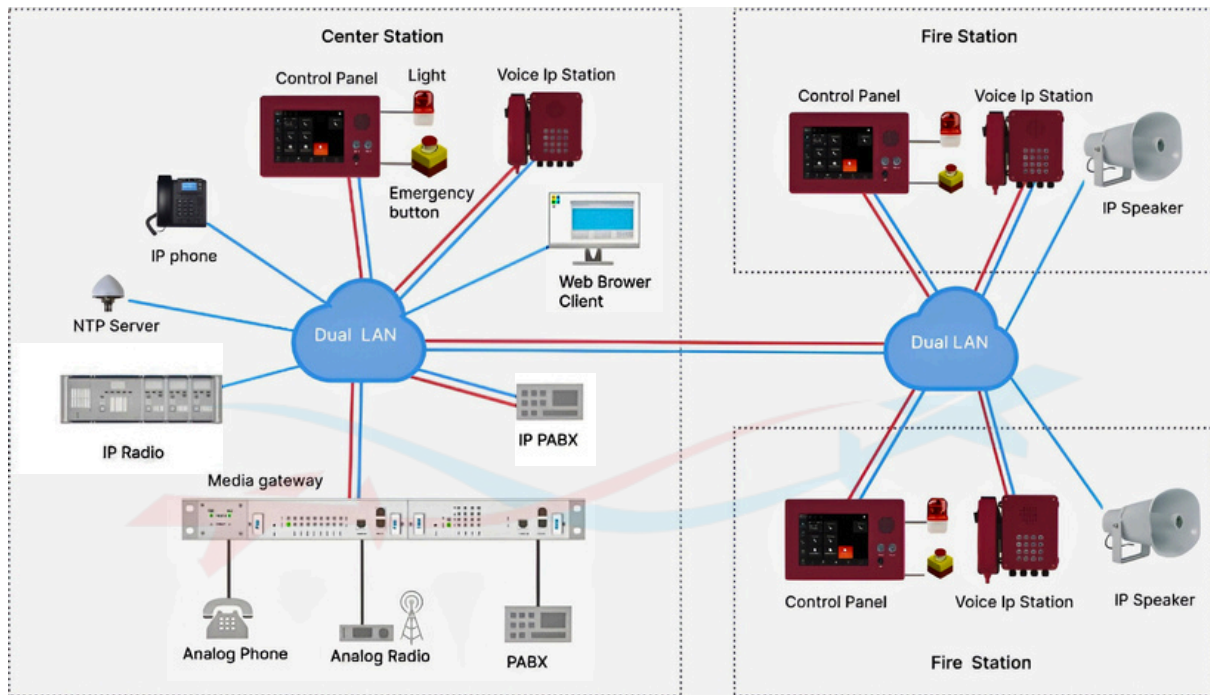


AIRFIELD ALARM SYSTEM

Airfield Alarm System is a mission-critical emergency communication solution enabling instant alerting and coordinated response to airfield incidents. It connects ATC, fire, medical, and rescue services across all critical zones through real-time voice and alarm broadcasting.

Built on a VoIP-based architecture and compliant with ICAO and EUROCAE (ED-137 / ED-153) standards, it integrates seamlessly with radios, intercoms, telephones, and public address systems. Its scalable, distributed design ensures fast, reliable emergency communication across airports and airbases.

SYSTEM ARCHITECTURE



KEY FEATURES

- ✓ **ICAO-compliant**, suitable for airport operations and fire alarm centers.
- ✓ **High availability architecture** with dual power supplies and primary/backup Ethernet networks.
- ✓ **VoIP-based system** compliant with ED-137B/C and ED-153 standards.
- ✓ **Seamless integration** with digital radios (ED-137B/C), IP phones (RFC 3261), and analog radios/telephony via media gateways.
- ✓ **Recording support**, including interfaces for analog recorders and short-term automatic recording via integrated control panel.
- ✓ **Accurate time synchronization** using GPS-based NTP for precise event logging.

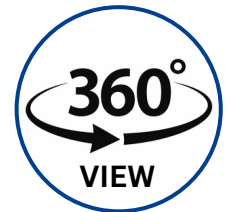
MOBILE ATC

Mobile ATC System is a fully self-contained, rapidly deployable air traffic control solution designed for temporary airfields, remote locations, and emergency operations. It delivers flexible, reliable, and scalable ATC capability, enabling seamless aircraft control and communication with full operational readiness within hours of deployment.



KEY FEATURES & HIGHLIGHTS

- ✓ **Rapid Deployment:** Optimized for remote and time-critical ATC operations.
- ✓ **Panoramic Visibility:** Elevated cabin ensures glare-free situational awareness.
- ✓ **Integrated ATC Systems:** Built-in meteorological sensors and control systems.
- ✓ **Hydraulic Elevation:** Adjustable height with safety locking for varied terrain.
- ✓ **Ruggedized & Mobile:** Designed for reliable field and defence operations with ballistic protection.
- ✓ **Airspace Safety:** Enables controlled aircraft movement in tactical zones.
- ✓ **Communications Support:** VHF and VoIP/SIP integration.
- ✓ **Secure Operations:** Encrypted storage, secure web interface.
- ✓ **Incident Playback:** Timeline-based replay with secure export capability.
- ✓ **24x7 Mission-Critical:** Continuous operation with system monitoring.
- ✓ **Environmental:** Operates from -25°C to +55°C.



APPLICATIONS

- ✳ Emergency in the fixed control tower.
- ▢ Temporary Control Tower Operations.
- 🌍 Tactical deployments.
- ✈ Air shows.
- 🏗 Traffic control on offshore platforms.
- 🏠 Parallel ATC Training Operations.

CONFIGURATION AVAILABLE

- ✓ Mounted on existing structure.
- ✓ Mounted on containers.
- ✓ Mounted on a trailer.
- ✓ Mounted on a vehicle.
- ✓ Additional sub-systems available:
 - High lift system.
 - Mobile Generator System.

SYSTEM INCLUDES

- ✓ **Controller Workstations:** One to four ATC controller positions.
- ✓ **Voice Communications:** Voice Communication Control System (VCCS).
- ✓ **Radio Systems:** VHF/UHF and HF radio communication systems.
- ✓ **Recording System:** Voice recording and replay system.
- ✓ **Meteorology:** Integrated meteorological system.
- ✓ **Surveillance:** Radar display and VHF Direction Finder (VDF) system.
- ✓ **Airfield Systems:** Airfield lighting, control & monitoring systems.
- ✓ **Timing & Synchronization:** NTP clock system.
- ✓ **Environmental Control:** Air conditioning system.
- ✓ **Power Supply:** UPS or DC power supply with battery backup.
- ✓ **Accessories:** Signal light gun, fire extinguishers, binoculars, obstruction lights, crash alarm, gun stand and related equipment.

PRECISION APPROACH & NAVIGATION SYSTEMS

A fully integrated ILS and DME solution delivering precise, all-weather approach guidance and enhanced operational safety for civil and defence aviation.

INSTRUMENT LANDING SYSTEM (ILS)

Localizer & Glide Path

Provides accurate lateral and vertical guidance to ensure stable, safe aircraft approaches in low-visibility conditions.

KEY FEATURES

- ✓ Localizer (108–112 MHz) and Glide Path (328.6–335.4 MHz)
- ✓ High Frequency Stability: Localizer $\pm 0.0001\%$ (55 Hz @ 110 MHz) and Glide Path $\pm 0.0001\%$ (166 Hz @ 332 MHz)
- ✓ Stable signal performance with temperature compensation
- ✓ Integrated monitoring and alarms
- ✓ Redundant power with battery backup

KEY HIGHLIGHTS

- ✓ ICAO Level 4 compliant precision approach system
- ✓ Accurate runway alignment and glide slope guidance
- ✓ Reliable performance in harsh environments
- ✓ CAT I, upgradeable to CAT II / CAT III
- ✓ Low maintenance and high availability



DISTANCE MEASURING EQUIPMENT (DME)

Provides pilots with accurate slant-range distance information to enhance approach awareness and navigation accuracy.

KEY FEATURES

- ✓ High-accuracy distance measurement
- ✓ Seamless integration with ILS and ATC systems
- ✓ Continuous 24x7 all-weather operation
- ✓ Designed for civil and defence airfields



SMART ENERGY METERS

A Smart Energy Meter is an advanced digital electricity meter that enables real-time measurement, two-way communication, and remote management of energy consumption. It forms a core part of Advanced Metering Infrastructure (AMI), supporting efficient, transparent, and intelligent energy management for utilities and consumers.

KEY FEATURES

- ✓ Real-time measurement of energy, voltage, current, and power factor.
- ✓ Two-way communication with utility systems.
- ✓ Remote connect / disconnect and firmware upgrade.
- ✓ Event, tamper, and outage logging.
- ✓ Time-of-Day (ToD) tariff support.
- ✓ Net metering and prepaid functionality.
- ✓ Secure data communication with encryption.
- ✓ DLMS/COSEM compliant and interoperable.

KEY BENEFITS

⚡ For Utilities (DISCOMs)

- ✓ Reduced AT&C losses and accurate billing and remote operations with lower O&M cost.

👉 For Government

- ✓ Supports Smart Grid and Digital India initiatives and improves energy efficiency and revenue assurance.



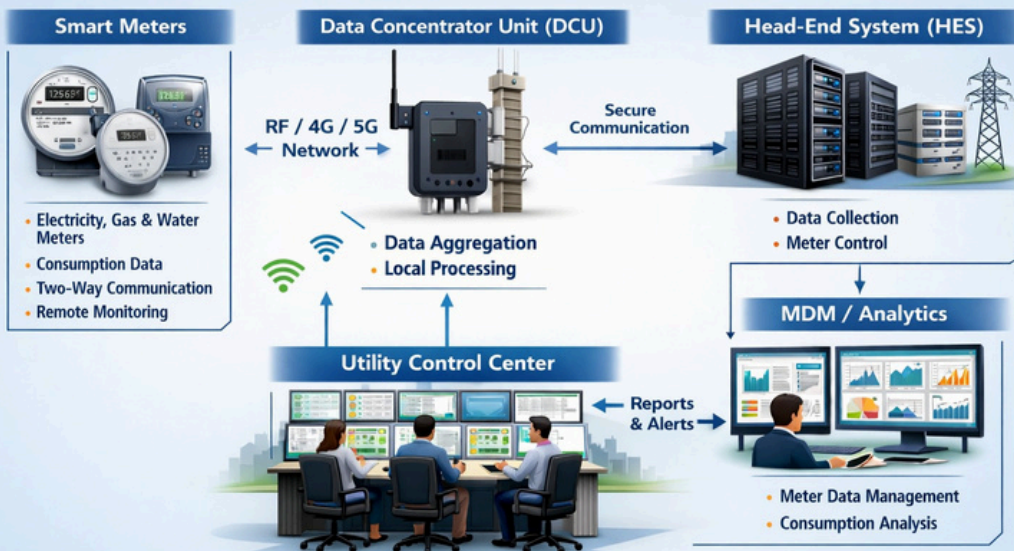
SYSTEM ARCHITECTURE

- ✓ **Smart Meter:** Single or three phase digital energy meter.
- ✓ **Communication:** RF, PLC, or Cellular (4G / NB-IoT).
- ✓ **Central Systems:** HES and MDMS for data collection, control, and billing.

APPLICATIONS

- 🏠 Residential & Commercial
- 🏭 Industrial & Utilities
- 🏙️ Smart Cities & Government
- ⚡ Renewable & EV Ecosystem
- 🛡️ Defence & Strategic Installations

Smart Energy Meter Infrastructure



OTHER OFFERINGS

AIR TRAFFIC MANAGEMENT SYSTEM (ATMS)

ADVANCED SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM (A-SMGCS)

NON DIRECTIONAL BEACON (NDB)

DIRECTION FINDER (V/UHF/HF)

SOLID-STATE WEATHER RADAR (X/C-BAND)

RUNWAY VISUAL RANGE (RVR) - TRANSMISSOMETER/FORWARD SCATTERMETER

LASER AND SONIC ANTI-BIRD SYSTEM

ATC AND USER CONSOLE

POWER GENERATION SYSTEM (CPCB-IV+)

POWER BACKUP SYSTEM (MODULAR)

FRANGIBLE MAST (ICAO-COMPLIANT)

BOLLARD AND BOOM BARRIERS

FRANGIBLE AND NON-FRANGIBLE EQUIPMENT SHELTER

VHF/UHF/HF RADIOS FOR CIVIL AND DEFENCE



We are an experienced manufacturer, system integrator and service provider delivering comprehensive airfield solutions across Communication, Navigation, Surveillance, weather, and Air Traffic Management (ATM), Aligned with the Government of India's Make in India initiative. We combine strong indigenous capabilities with strategic partnerships with globally reputed OEMs. We have proven expertise in upgradation and modernization projects, with successful execution of multiple assignments for Indian defence and civil aviation organizations, delivering reliable, compliant, and future-ready aviation infrastructure solutions.

ABOUT US

We are a rapidly growing company focused on strengthening national defence and airport infrastructure through indigenous design, development, and deployment of advanced technologies. Our capabilities span modernizing air traffic management systems, navigational and visual aids, secure communication platforms, and integrated airport infrastructure –delivering mission-critical solutions aligned with the Make in India initiative.





CONNECT US