



AeroGCS Ecosystem Impact Document:

Empowering Drone Operations with AeroGCS



1. Introduction

AeroGCS, developed by PDRL, is a pioneering Ground Control Station (GCS) software suite developed to optimize drone operations across diverse industries. Built with a focus on precision, safety, and regulatory compliance with DGCA standards, AeroGCS has revolutionized drone usage for Original Equipment Manufacturers (OEMs) and Drone Service Providers (DSPs). This document outlines the extensive impact AeroGCS has made on drone operations, highlighting its broad ecosystem, performance metrics, product capabilities, trusted partnerships, and the resulting influence on brands across the industry.

2. Impact Objective

The primary goal of this document is to demonstrate the impact of AeroGCS Ecosystem:

- 2.1 Operational Efficiency:** AeroGCS's contributions to enhancing drone operations and maximizing productivity.
- 2.2 Industry Leadership:** Establishing AeroGCS as a leading solution for OEMs and DSPs in the drone ecosystem.
- 2.3 Real-time Analytics:** Outlining the benefits of AeroGCS Enterprise's real-time performance monitoring and its significance for large-scale operations.



3. Literature Review

AeroGCS has emerged as India's most advanced GCS software, catering to a wide range of drone applications, including agriculture, defence, and infrastructure. By complying with DGCA regulations, AeroGCS ensures maximum safety and reliability during operations. Recent studies in drone-based agricultural spraying highlight the increase in productivity and efficiency compared to manual methods. AeroGCS adds to these benefits by offering real-time performance monitoring and analytics, ensuring accurate results and streamlined workflows for all users. These analytics drive decision-making and provide measurable performance metrics that help scale drone operations in agriculture, infrastructure inspections, and defence applications.

4. The AeroGCS Ecosystem

AeroGCS offers an integrated ecosystem tailored to support the entire drone operational lifecycle. The AeroGCS ecosystem includes:

- 4.1 AeroGCS Config:** AeroGCS Config, true to its name, streamlines and supports the entire drone configuration process with unmatched efficiency.
- 4.2 Custom Firmware:** Custom firmware by PDRL is a specialized agricultural firmware designed for automated drone missions, offering advanced features such as precise obstacle detection, robust security, and seamless control.
- 4.3 AeroGCS GREEN:** AeroGCS GREEN is an IV&V-certified precision spraying software that simplifies mission planning, ensures uniform spraying, and boosts efficiency for healthier farm fields.
- 4.4 AeroGCS DEFENCE:** A mission-ready drone software platform built to protect Bharat's skies, empower our armed forces, and safeguard our borders.
- 4.5 AeroGCS ORANGE:** Survey Mission planning software designed for a variety of drone operations.
- 4.6 AeroGCS ENTERPRISE:** AeroGCS Enterprise provides real-time tracking of all drone flights, comprehensive flight logging, and complete visibility into all drone operations, ensuring seamless monitoring and management.



5. AeroGCS Product Capabilities

The AeroGCS suite provides a comprehensive range of specialized features tailored to address the unique requirements of OEMs and DSPs.

5.1 AeroGCS GREEN

AeroGCS GREEN is an IV&V-certified precision spraying software that promotes healthier farm fields. It simplifies mission planning and features obstacle avoidance, spray flow monitoring, and detailed reports. It ensures uniform spraying, saving time and boosting efficiency.

Key Features:

- Precision mapping and exclusion zones
- Real-time spray flow monitoring
- Obstacle avoidance and auto-exclusion areas
- Detailed field reports with actionable insights
- Integrated with AeroGCS Enterprise for smart insights.

AeroGCS GREEN Reference Links

- [AeroGCS GREEN Detailed Demo](#)
- [AeroGCS GREEN User Manual](#)



5.2 AeroGCS Enterprise

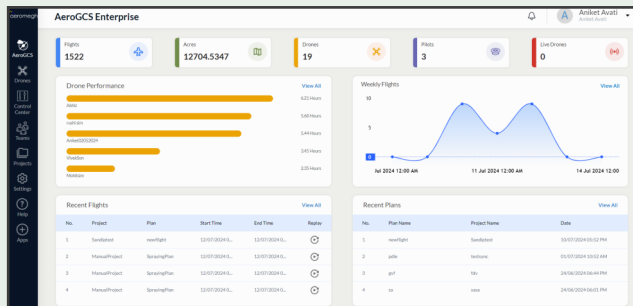
AeroGCS Enterprise Edition enables real-time tracking of drone flights, detailed logging, and complete visibility into all drone operations. With seamless account integration, AeroGCS Enterprise ensures comprehensive fleet management, efficient data synchronization, and access to a wide array of advanced functionalities, all with just a few clicks.

Key Features:

- Operational insights: locations, acreage, and revenue tracking
- Real-time drone and fleet management
- Comprehensive performance reports for accurate billing

AeroGCS Enterprise Reference Links

- Visit AeroGCS Enterprise

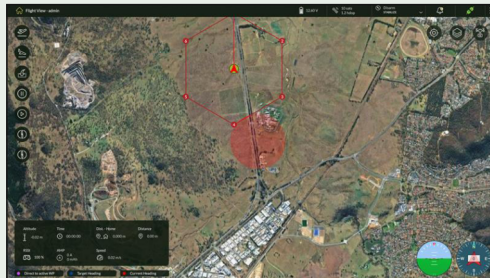


5.3 AeroGCS DEFENCE

AeroGCS DEFENCE :a mission-ready drone software platform built to protect Bharat's skies, empower our armed forces, and safeguard our borders. More than just a Ground Control Station (GCS), AeroGCS DEFENCE is a strategic digital shield for Bharat.

Key Features:

- Digitally signs drone firmware to prevent tampering and cyber-injection attacks.
- All drone GCS communications are secured, eliminating man-in-the-middle attack risks.
- All mission files and maps are secured using encryption algorithms trusted standards in defence. Each user gets a unique, password-protected key ensuring file access is restricted and secure.
- Execute mission planning seamlessly without the need for an internet connection. With support for pre-downloaded maps and advanced GIS formats including .tiff raster maps and vector shape files.
- Enables operators to mark and manage points of interest with precision and ease. By simply clicking on the live video feed, users can interactively mark targets, with the system automatically calculating the latitude and longitude and placing a corresponding marker on the mission map.
- AeroGCS DEFENCE is equipped with an intelligent object drop system engineered for mission-critical logistics and tactical operations. This enables drones to deliver essential payloads to precise GPS coordinates, even in remote or high-risk zones.



5.4 AeroGCS ORANGE

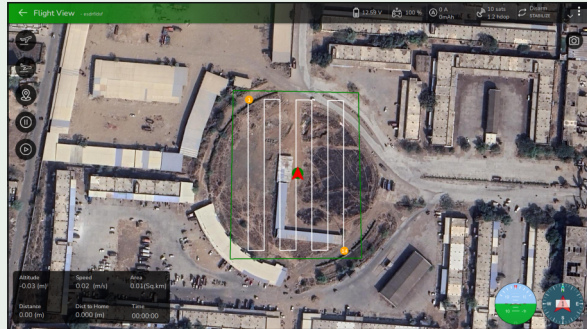
AeroGCS ORANGE enables precise and efficient drone surveys across industries, offering mission planning for large-scale operations. With cloud integration for real-time data sharing and built-in features for high-quality image verification, it ensures accuracy while minimizing rework.

Key Features:

- Plan various drone surveys quickly and efficiently.
- Capture data with the required Ground Sampling Distance (GSD) accuracy.
- Sync and share data in real-time from the field.
- Verify and enhance image quality with in-built features.
- Collaborate seamlessly using AeroGCS Enterprise integration.

AeroGCS ORANGE Reference Links

- Visit AeroGCS ORANGE

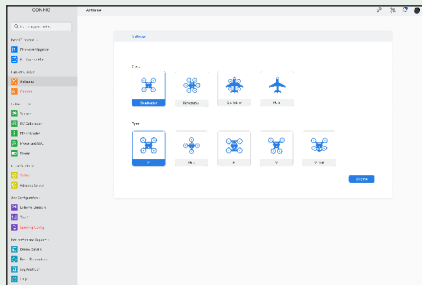


5.5 AeroGCS CONFIG

AeroGCS Config is a specialized configuration software within the AeroGCS software suite, tailored exclusively for Original Equipment Manufacturers (OEMs). It provides advanced settings to manage and customize various aspects of drone operations, allowing OEMs to configure parameters to meet specific operational and performance needs.

These configurations include:

- Calibration Sensors and Payloads: Integrates and calibrates sensors (GPS, IMUs, RC, ESC, Power) and payloads (cameras, spraying systems).
- Safety Settings: Configures geofences, return-to-home (RTL), and fail-safe mechanisms.
- Advanced Parameters: Offers configurable vehicle behaviour parameters stored in persistent storage, auto-generated from the source code (may include unreleased features).



5.6 Custom Firmware

Custom Firmware by PDRL is an advanced agricultural firmware engineered for automated drone missions. It features precise obstacle detection, robust security, and intuitive control, ensuring efficient, secure, and seamless spraying operations tailored to agricultural needs.

Key Features:

- **Automatic Obstacle Detection**

Detects obstacles and switches to loiter mode, resuming spraying once cleared.

- **Stable Operation**

Ensures consistent spraying with enhanced stability during mission recovery.

- **Liquid Monitoring**

Tracks liquid consumption in real-time and initiates actions if the tank is empty.

- **High-Level Security**

Protects against unauthorized access with firmware protection, controlled GCS connections, and encryption.

- **Sensor Compatibility:**

Supports key sensors like H30 and R21 for stable altitude and precise pathing.



6. Ag++ Flight Controller

Ag++ revolutionizes agriculture drone spraying with a faster processor, higher memory, and superior drone performance. It offers precision spraying algorithms for greater efficiency. Upgrade to Ag++ for smarter and more reliable agriculture operations.

Key Features:

- Built for Precision Agriculture
- Powered by Agri Specialised Software Stack
- Aerospace grade metal body
- Localized Support
- Training & Certification Support



7. NamoAG (Navigation for Modern Agriculture)

Introducing NamoAG by PDRL. Indigenously developed Agri-Drone Navigation device. Designed with the unique challenges of agriculture fields in mind, NamoAG delivers high-accuracy navigation, multi-constellation satellite support, and seamless pairing with Ag++ Flight Controller. From wide-open farms to complex terrains, fly with confidence.

Key Features:

- Indigenously Designed for Indian Conditions
- Built for Precision Agriculture
- Multi-Constellation Satellite Support
- Seamless Electronic Pairing with Ag++ Flight Controller



8. AeroGCS Performance Parameters

AeroGCS's growing footprint is reflected in its performance metrics:

3 Million

Total Flights

6000+

Registered Drones

70%

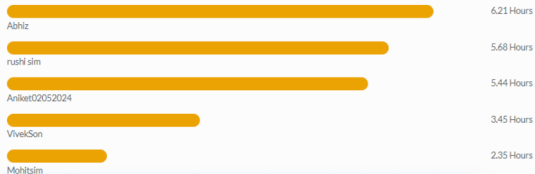
Indian Agriculture
Drone Manufacturers

100+

Number of Indian OEM's
using AeroGCS

Drone Performance

[View All](#)



Weekly Flights

[View All](#)



9. AeroGCS Certification Programs

PDRL offers a comprehensive certification program to equip individuals with the skills needed to excel in the growing drone industry, centred around AeroGCS platforms. Certifications like PCDP focus on mastering AeroGCS GREEN and AeroGCS Enterprise, essential for drone operations across sectors. The program enhances expertise in areas such as mission planning, real-time analytics, and operational management. Participants benefit from AeroGCS tutorials, documentation, and community resources, followed by exams for certification.

● Certification Program

PDRL Certified Drone Professional (PCDP)

● Impact

Certifications: 225 PCDP certifications awarded.

Preparing now: 716 candidates

RPTOs: 11 RPTO's onboarded.

Training: 68 product sessions, 44 expert sessions.

Outreach: Engaged with 24 colleges.

Reference Link

PDRL Certification Program



10. AeroGCS Global Competition 2024

The AeroGCS Global Competition is a competition aimed at inspiring innovation and advancing drone operation skills. Open to participants worldwide, the competition unfolds in three stages. It begins with an online MCQ challenge to evaluate theoretical knowledge of AeroGCS software and drone operations. This is followed by a simulator stage, where participants demonstrate their practical expertise in realistic virtual scenarios. The top contenders advance to the grand finale in India, competing live to showcase their drone flying skills and ability to execute complex missions in real-world conditions.

● Outreach and Engagement Details

Registrations: 127 total registrations.

Round 1: 93 participants advanced.

Round 2: 21 participants advanced.

Final Stage: 12 contestants reached the finals.

Winners: Top 3 crowned as champions.



● Reference Link-

AeroGCS Global Competition (Feb 2024)



11. AeroGCS Global Competition 2.0-2025

AeroGCS Global Competition 2.0 is an initiative aimed at engaging students, drone pilots, and industry professionals to promote innovation and skill development in drone technology. The competition serves as a platform for participants to showcase their expertise, collaborate with peers, and contribute to advancing the drone ecosystem. By encouraging active participation from diverse stakeholders, the event fosters knowledge sharing and highlights the potential of drones in various industries, including agriculture, logistics, and surveillance.

● Outreach and Engagement Details

Registrations: 212 total registrations.

Round 1: 191 participants advanced.

Round 2: 172 participants advanced.

Final Stage: 30 contestants reached the finals.

Winners: Top 3 crowned as champions.



● Reference Link-

AGC2025-AeroGCS



12. AeroGCS Trusted Partners and Customers

Customers Being Served



Authorized Training Partners



13. Independent Verification & Validation (IV&V)

Certification of AeroGCS GREEN Software

● Introduction to IV&V

IV&V ensures software reliability and safety, crucial for mission-critical applications like drones. PDRL is India's first IV&V-certified company in the drone industry, setting new quality benchmarks.

Certification Highlights

- Product: AeroGCS GREEN
- Scope: Independent validation, testing, and compliance with DO-278A standards.

Product Overview

AeroGCS GREEN is mission-planning software designed for precision spraying, promoting sustainable farming and improved crop health.

Testing & Validation

Certified under SAE ARP4761 and DO-278A AL5, with rigorous virtual and physical testing using drones equipped with advanced sensors.



14. EMC IEC 61000-4-2 certification

Ag++ Flight Controller has successfully received EMC IEC 61000-4-2 certification, a globally recognized authority in quality and compliance.

This is the first step towards exporting Ag++ Flight Controllers to international markets, powered by the AeroGCS software stack, bringing world-class, Made-in-India drone solutions to a global stage.

TUVINDIA			
Report Number : TUV/PTL/25-26/EMC/0038		Date of issue : 25 August 2025	
ULR NUMBER : TC23725000000387F			
DISCIPLINE: Electronics Group EMC Test Facility Product details:			
Test Item: #	AeroFC Ag++		
Model Number: #	Ag++		
Serial No.: #	AG0000029100F3233043799630		
Trademark: #			
Make: #	Passenger Drone Research Private Limited		
Sample ID:	TUV/PU250825-002		
Number of Samples:	1		
Date of receipt:	25 August 2025		
Condition of EUT on receipt:	Good		
Applicable Standard/ test specification/ regulation:	As per IEC 61000-4-2:2008		
Test Result:	The test item Passed / Failed the test specification(s)		
Declaration of Conformity:	Declaration of conformity of results is based on as per standard limits or criteria.		
Other Aspects:	This test report relates to the test sample submitted only.		
Testing (Start date):	25 August 2025	End Date:	25 August 2025
Laboratory Ambient Condition:	Temperature in °C: 24°C to 28°C Relative humidity in %: 45 to 65 % Atmospheric pressure in Hpa (if applicable): 980Hpa		
Date of issue:	25 August 2025		
Approved By:	Issued by:		
 Manish Bhakade / AVP - Product Testing Lab	 Kunal Behaniya / Customer Support Engineer		
Date : 25 August 2025	Date : 25 August 2025		

Page 2 of 12
TUV-TR-PP-06 Issue 02 / 27.04.2021/ Rev 06/ dated 13.09.2025
TUVNORDGROUP



15. Patents

- **PATENT 1: Granted**

Title: SYSTEM, APPARATUS AND METHOD FOR CORRIDOR SURVEY

- **PATENT 2: Granted**

Title: SYSTEM AND METHOD FOR DETERMINING PATH

- **PATENT 3: Filed**

Title: SYSTEM, APPARATUS AND METHOD FOR POLYGON SURVEY

16. Impact Analysis

AeroGCS has significantly enhanced drone operations for its partners by improving efficiency, accuracy, and overall operational performance. The real-time analytics provided by the AeroGCS Enterprise Platform have been critical in managing large-scale operations, allowing for accurate monitoring of drones, sprayed acreage, and other key metrics. This capability has revolutionized how drone operations are executed and monitored in agricultural, defence, and industrial sectors.



17. Value Addition

The AeroGCS suite delivers a comprehensive range of specialized features tailored to the distinct needs of OEMs and Drone Service Providers (DSPs), adding immense value across industries.

- **AeroGCS GREEN:** Enhances agricultural operations with precision spraying, real-time monitoring, and detailed field insights, ensuring uniform and efficient coverage.
- **AeroGCS Enterprise:** Revolutionizes large-scale drone operations with real-time cloud-based synchronization, fleet management, and performance analytics, optimizing operations and revenue tracking.
- **AeroGCS ORANGE:** Supports advanced survey missions with accurate data capture, and seamless cloud integration, ideal for industries requiring large-scale data collection.
- **AeroGCS Config:** Empowers OEMs with advanced configuration and drone setup capabilities for customized operations, providing precise control over sensors, safety settings, and vehicle behaviour.

Together, these products streamline drone missions, enhance operational efficiency, and provide actionable insights, transforming the use of drones across sectors.

18. Conclusion

AeroGCS optimizes drone operations across industries with real-time analytics, precision mapping, and cloud-based monitoring. It enhances efficiency and safety in large-scale operations and drives agricultural productivity, making it a key solution for scaling operations and improving performance in various sectors.



Thank You!



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