PULSE P19

Light Military Multi Mission Aircraft

The Future is Unmanned.

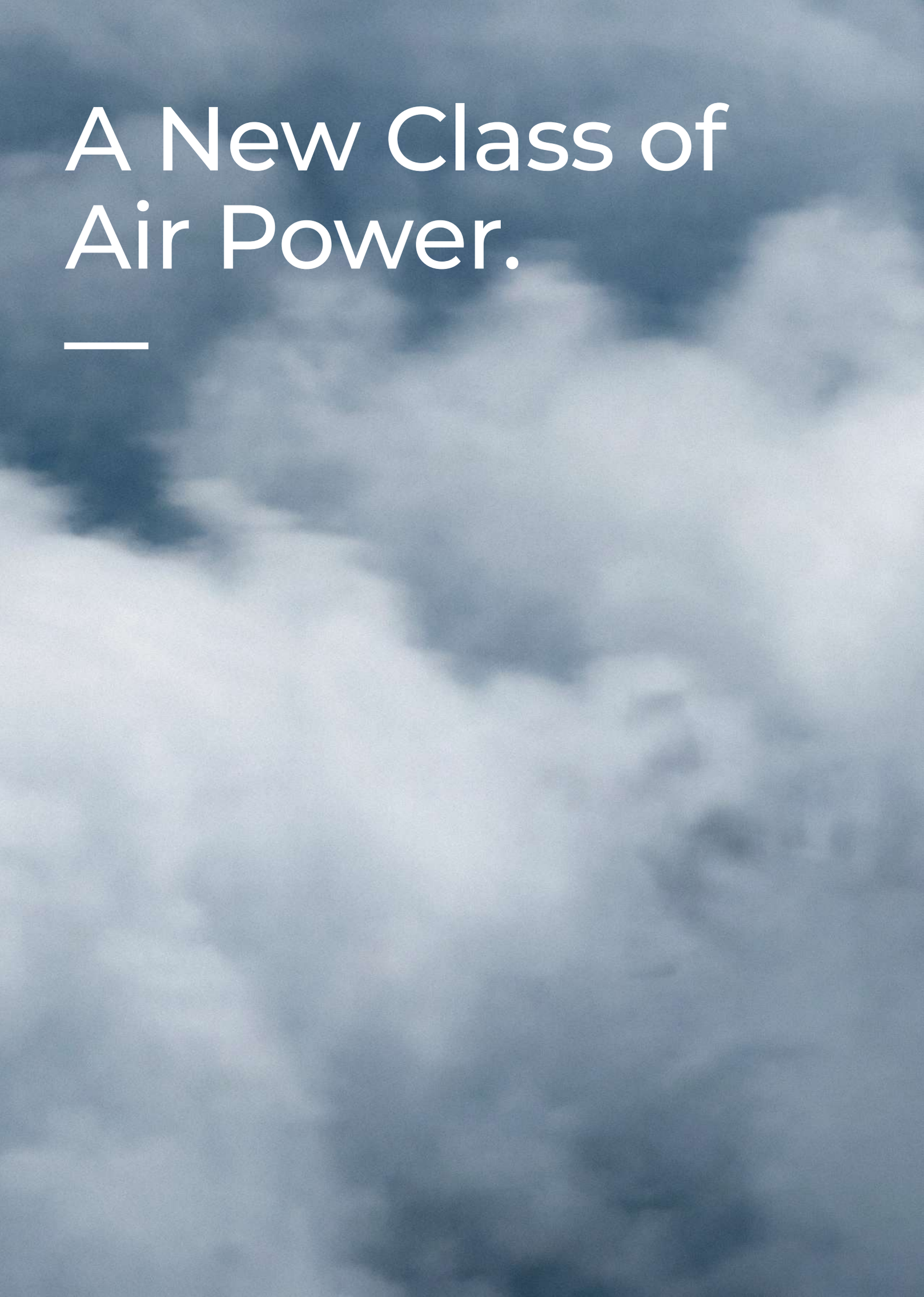
Quantum-Systems is a leading European deep-tech company specializing in unmanned systems. We develop, produce, and scale integrated hardware, software, and AI-based system solutions that are already operational across multiple domains today.

Our systems combine autonomous platforms, advanced sensor technologies, secure communication architectures, and AI-driven data processing into end-to-end, mission-ready solutions. They enable precise situational awareness, rapid decision-making, and robust operational execution – across domains and in real time.

Headquartered in Gilching near Munich, with additional national and international locations, Quantum-Systems develops all core technologies in-house – from physical platforms to mission and control software and AI-powered analytics. Quantum-Systems stands for for technological excellence, scalability, and superiority technological superiority.

Quantum-Systems serves defense and security customers around the world, enabling mission-critical operations with advanced unmanned solutions. Armed forces, security agencies, and government organizations depend on our technology to provide actionable intelligence, persistent surveillance, enhanced situational awareness, and reliable support in complex operational environments.

What sets us apart is not only technological leadership, but also speed, scalability, and vision. In a market that is currently being redefined, we set new standards.


A New Class of
Air Power.

Detect. Decide. Defend.

PULSE P19 is the first aircraft designed from inception to dominate the low-altitude battlespace with optional piloting capability.

The Airspace Has Changed.

The proliferation of drones and unmanned systems has created an increasingly saturated and unpredictable airspace - operating low, often below traditional radar coverage and beyond established defenses.

These low-cost threats can be deployed on at scale, placing persistent pressure on forces and critical infrastructure. Conventional air defense systems and traditional combat air patrol assets were not designed to counter large numbers of small, agile aerial threats across the low-altitude battlespace. The use of high-end fighter aircraft against scalable drone threats is often operationally and economically inefficient.

This evolving environment exposes a critical capability gap in modern air defense and demands a new class of airborne capability - combining persistent awareness, rapid response and networked mission integration.

Built for Counter-UxS.

One of the key capabilities of PULSE P19 is the detection, tracking and defeat of asymmetric airborne threats in the low-altitude airspace. Using its onboard radar and high-power EO/IR systems, PULSE P19 can actively and passively detect and track fast, long-range, strike drones, rapidly position itself for intercept, and deploy Quantum Systems interceptor drones or other precision effectors for engagement. Combining high agility with extended endurance and persistent time on station, PULSE P19 is designed to maintain continuous airborne presence where conventional platforms face operational limitations.

Integrated through the MOSAIC UXS command-and-control (C2) system, the complete intercept workflow - from detection to effector release and engagement execution - can be controlled either by the pilot or through remotely controlled aircraft operations.

Multi-Role by Design.

Intelligence, Surveillance and Reconnaissance (ISR)

Persistent ISR capability is enabled through the combination of long-range radar, high-power EO/IR sensors and SIGINT/ELINT payloads.

Integrated mission systems support detection, identification and tracking of air and ground targets in day, night and all-weather conditions, while long mission endurance and networked connectivity provide continuous situational awareness across the operational area.

Training Capability

Designed for basic, advanced and operational flight training (“Lead-in Fighter Training”), the platform combines modern cockpit ergonomics, avionics and augmented reality training options.

Through its active flight controls, PULSE P19 is also capable of providing training capability for both piloted fly-by-wire flight control systems and UAS remote operators. Integrated simulation, augmented reality and manned-unmanned teaming capabilities enable realistic preparation for modern air operations while reducing training and operating costs.

Maritime & Border Patrol

Long-endurance monitoring of maritime domains and borders, providing persistent situational awareness and rapid response across wide operational areas.

With up to 18+ hours endurance in unmanned operation and extended mission range, PULSE P19 is designed for continuous airborne presence over critical regions.

Manned-Unmanned Teaming

PULSE P19 enables coordinated operation of manned and unmanned systems during mission execution.

The platform, in both manned and semi-autonomous modes, supports the deployment and operation of interceptor drones, ISR UAVs, ground and maritime systems, and loitering munitions. This enables distributed sensing and engagement capabilities extending beyond the aircraft platform.

MOSAIC UXS

Sensors, flight control, AI and effector systems are seamlessly integrated through Quantum Systems MOSAIC UXS command-and-control software, creating a highly connected and networked mission environment.

High-bandwidth SATCOM and line-of-sight datalinks enable real-time integration into orchestrated operations, coordinated control of unmanned assets and a shared tactical picture across domains - transforming PULSE P19 from a standalone aircraft into an airborne mission platform for manned-unmanned teaming operations.

Human When it Matters. Autonomous When it Counts.

Human where judgment needed.

PULSE P19 combines human decision-making with advanced mission automation. Its fault-tolerant mission autopilot reduces pilot workload during high-intensity operations, enabling crews to focus on tactical decision-making and mission execution. Designed from inception as an optionally piloted platform, PULSE P19 is ready for autonomy.

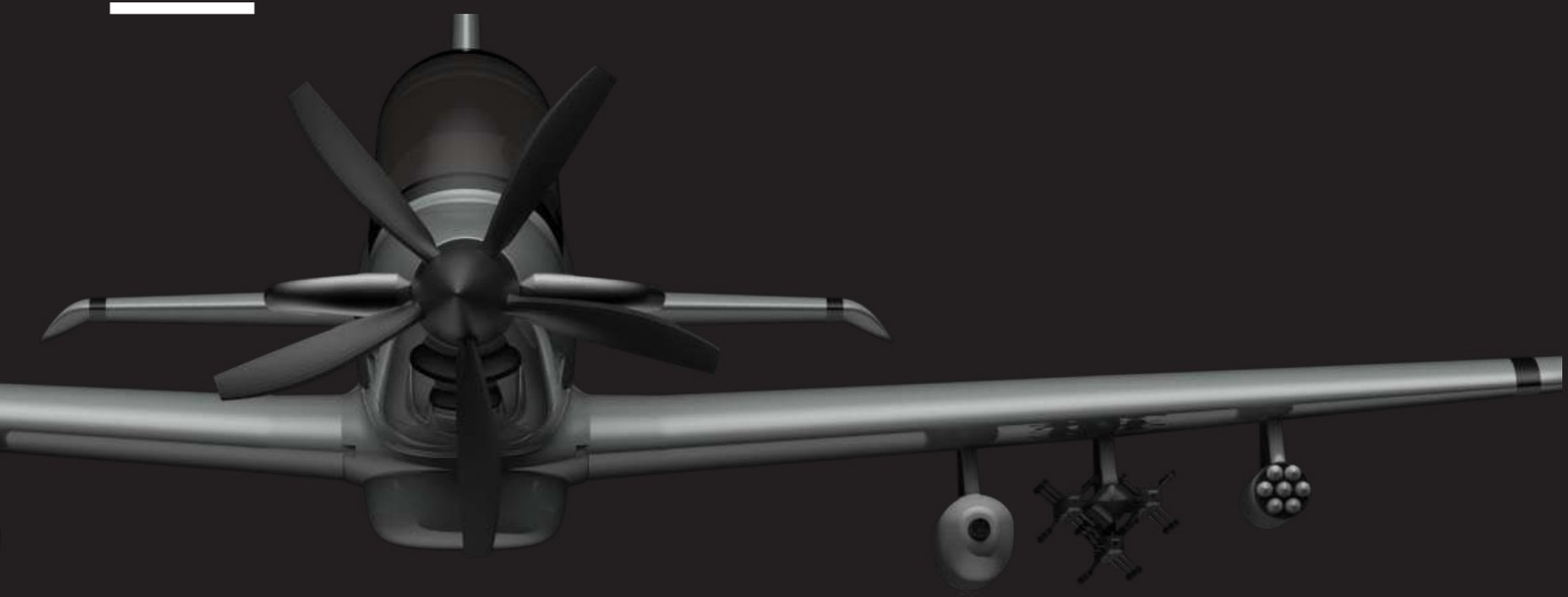
Design Aspects

PULSE P19 provides a military specification tandem cockpit geometry for excellent forward and ground visibility from both cockpits. A unique combination of IFR-certified avionics, a large area mission display for optimal mission execution with full night-vision compatibility.

Cockpits are air conditioned with heating and cooling, operable also pre-flight. PULSE P19 can optionally be equipped with cabin pressurization, ejection seats, and protected by light armour. With a ruggedized landing gear designed for operation from unpaved runways, equipped with a de-icing system, and capable of operating in GNSS-denied environments PULSE P19 is ready at any time and from any location.

A modern composite structure provides an unlimited lifetime airframe and is optimized for low maintenance requirements and low life-cycle cost.

Payload



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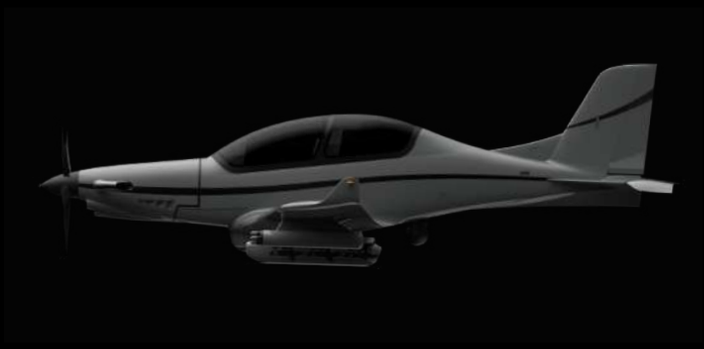
1. Machine gun pod
2. C-UAS
3. Laser-guided missiles
4. Loitering munitions
5. ESA radar
6. Up to 22" EO/IR system
7. Standard fuel tank
8. New types of precision munitions

PULSE P19 integrates payload systems in a Modular Open System Architecture, providing flexible mission capabilities, delivering a future-proof aircraft designed for Counter-UxS, ISR and multi-role mission operations. Configurable radar, EO/IR, SIGINT and communication systems combined with flexible under-wing payload stations to support interceptor drones, precision-guided munitions, gun pods and extended-range fuel tanks. Open-system integration enables mission-specific configurations tailored to operational requirements.

Technical Specifications



Performance

Maximum cruise speed (6,100 m / 20,000 ft, MCP)	537 km/h (290 kts)
Maximum permissible operating speed (0–4,000 m / 13,100 ft)	556 km/h (300 kts)
Maximum Mach number (4,000 m / 13,100 ft – 8,000 m / 26,200 ft)	Mach 0.58
Service ceiling	7,620 m (25,000 ft)
Take-off distance (ISA, sea level)	< 550 m (1,800 ft)
Landing distance (ISA, sea level)	< 450 m (1,470 ft)
Load factor limits	+7.0 / −4.0 g

Mass & Payload

Maximum take-off mass (aerobatic)	2,500 kg (5,512 lb)
Maximum take-off mass (utility)	3,200 kg (7,055 lb)
Maximum take-off mass (military)	4,200 kg (9,259 lb)
Basic empty mass (excluding ejection seats)	1,700 kg (3,748 lb)
Payload (internal + external)	2,500 kg (5,512 lb)

Payload flexibility

+ Belly mounted radar station
+ Up to 22” retractable EO/IR gimbal
+ 6x Wing stations, standard 14” NATO locks
  - 4x 500lbs-class, wet
  - 2x 250lbs-class
  - 2x optional wing tip stations

Maximum internal fuel	1,400 L (370 gal)
Internal + external	2,300 L (608 gal)
Max. allowed fuel for aerobatics	460 L (121 gal)
Endurance on int. fuel	11+ h
Max. endurance (int. + ext. fuel)	18+ h
Range on internal fuel	2,200+ km (1,200+ NM)
Max Range (int. + ext. fuel)	3,700+ km (2,000+ NM)

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