PIPISTREL

PIPISTREL SURVEYOR

Pipistrel Surveyor is the special mission programme for

SURVEILLANCE PLATFORMS

Which can be

PILOTED,

OPTIONALLY PILOTED,

or

PREPARED TO BE UAV

Description

Pipistrel aircraft, despite having an engine, were originally designed as gliders; this means they are able to perform many tasks with the engine switched off, completely silent over target, with a very low IR signature and radar reflection. Because of very low drag and power requirements, they can fly very long distances, have extreme endurances and can reach extreme altitudes.
These advantages have made the Pipistrel Aircraft also a perfect Surveyor Platform, a leading choice all over the world by civil authorities, special agencies, surveillance services and military operations. and anywhere a specially designed, individually customized platform is needed. The Pipistrel Surveyor family is based on the very successful SW airframe, the very same aircraft that NASA awarded first prize in both at the Personal Air Vehicle challenge in 2007 and at the General Aviation Technology challenge in 2008 and the foundation for EASA Type certified SW 121.
The Pipistrel Surveyor can be supplied as manned surveillance aircraft, UAV baseline platform, or an optionally piloted aircraft.
Pipistrel Surveyors are ideal for a wide variety of aerial tasks because of their specific design characteristics and they have many advantages:

- They are much less expensive to operate and use unleaded automotive fuel or Avgas
- They can take-off and land on grass or unprepared surfaces, not just hard runways
- They are very quiet, more that 50% quieter than a normal small aircraft
- In the air, they look like an inconspicuous sport/recreational aircraft and they are not treated suspiciously
- When piloted their high wing offer ideal views of the ground through enormous transparent doors
- They can be flown without the doors fitted, making them ideal so for visual aerial survey and hand photography
- They can be equipped with tundra wheels that allow take-off and landing from unprepared surfaces, no airport is needed
- They can be equipped with a ballistic rescue system, which saves the whole aircraft together with the crew if ever needed
- They can carry many different payloads, sensors and surveillence systems
- They can be easily dismantled in less than 15 minutes and stored in a dedicated trailer. Therefore, a hangar is not needed, and a regular vehicle can tow the aircraft in the trailer, no special transport is needed
- Because of the specific design philosophy, they need much less power than other comparable aircraft and consequentially provide extreme flight range even in the standard, basic configuration.

The Pipistrel Surveyor offerings can be used for all the following missions, and more:

- Day and Night operations
- Border Surveillance and Control
- Locating poachers and unauthorised activity in National Parks and other wildlife areas
- Homeland Security
- Special Events Security
- All kinds of Surveillance including communications interception
- Moving target detection and tracking

- Traffic Observation
- Convoy protection
- Power/Oil/Pipeline Monitoring
- Fire/ Natural Disaster Management
- Disaster Help - Civilian Support
- Airborne Data Acquisition
- Pollution Control
- Crime prevention
- Wildlife Management
- Forest Protection and Management
- Seaport monitoring
- Maritime/Costal Patrol
- SAR Operation and Victim discovery
- All kind of aerial photography
- Aerial cartography, 2-dimensional and 3-dimensional
- 3D terrain scanning, mining surveys, excavation quantity calculations etc
- 3D terrain modelling for future development, buildings, roads, railways etc

Pipistrel Platforms are highly efficient low-drag, high-wing composite construction monoplanes with a front mounted engine, and enhanced aerodynamics, which permit also for unpowered gliding flight with high performance. The high cantilever wing makes the platforms ideal for surveillance. They are proven in the hardest operating conditions all over the world with permitted temperature from -20°C to + 50 °C.
Any Pipistrel platform manned aircraft can be configured as an optionally piloted vehicle (OPV), meaning that the aircraft can be flown by an on-board pilot, should this be desired, or as a pure unmanned aerial system (UAV) i.e. never having a provision for a pilot/person on board. This decision must be made early in the process, as it heavily influences the design of the platform and its features.

Pipistrel can offer further specialised Surveyor customized platforms, adapted to customers special needs with aircraft capable of:

- Flying at extreme altitudes (up to 30,000 feet)
- With extra-long range (up to 4500 km) and
- With endurance at cruise speed up to 30 hours
- Capable of take-off and landing from airfields higher than 4.500 meters
- MTOM up to 900 Kg. (Special designed platforms for even higher requests can be designed and produced for our customers)

To be able to design the Platform according the most suitable customer’s needs, we may require the following information:

- the requested aircraft certification in target country for such aircraft and aerial work (type of certification)
- preferred range
- desired cruise speed
- desired top speed
- preferred endurance and at what speed
- desired ceiling

- planned highest landing altitude
- expected highest and lowest temperature for operation (in Celsius)
- Single pilot & operator crew (one set of flight controls) or twin crew (two sets of flight controls) if not UAV
- Preferred placement of the sensors, weights, sizes and required energy consumption.
- Any requested structural modifications and supports (SAR multiband sensors, GSM and satellite tracking systems, lidars and magnetometers)
- Requested modifications of the controls, servos and antennas position, additional power supply if UAV
- Requested modifications of the electric system and if additional power supply needed
- Cockpit avionics requirements IFR, VFR etc
- Special avionics requests (weather radar, lighting radar, long wave radio, what redundancy is requested etc.)
- Integration of the payloads, flight control system, servos, etc done by Pipistrel or customer

Almost 200 of our Survoyors are already flying as OPV or UAV in different parts of the world. Fleet experience and references include:
Amazilia Aerospace GmbH-Germany
ARGUS Aaviation Tecnologies AG-Switzerland
Beijing HXHD Science & Technology Co., Ltd-China
DZYNEtech-USA
Brigata Folgore Esergito Italiano-Italia
Government of Jharkhand-India
IIT Kampur-India
Indian Airforce-India
Indian Navy-India
King Abdullaziz KACST-Saudi Arabia
Quing An-China
Ministry of defense-China
Ministry of Interior-Slovakia
NASA-USA
Tata Airspace -India
Technology Service Corp. -USA
US Airforce-USA
Weizhen Aviation Technology – China
Wings For Aid Foundation-Netherlands

Standard Surveyor models Inclusions:

To make the choice easier Pipistrel offer 6 basic models of Surveyor Platforms which all feature:

- Exterior surfaces partially painted in matte grey acrylic paint, partially in white, cabin interior composite surfaces in grey
- Automatic connection of wing and tail mechanical controls
- Flaperons, elevator & rudder gaps sealed
- Airbrakes (if rapid descent is needed)
- Wingtip navigation lights, strobes and landing LED lights

- Electric elevator trim
- Modified engine cowling upper parts prepared for additional electric generators
- Camloc fasteners on the engine covers
- Ballistic Parachute for complete aircraft recovery
- Structural provisions for belly mounted gimbals in the fuselage
- Side door for payload access behind the cockpit
- Sliding window on the right door
- Cabin ventilation adjustable intake on left door
- Noise reducing & stainless-steel protected firewall
- Oil check door on top engine cover
- UV protected, slightly tinted, scratch free Lexan windshield or opaque painted in grey (customer choice)
- Three-point door fixation points
- Doors locks on both doors
- Drag reducing fairings on main wheels
- Integrated fuel tanks in the wings with filler neck. Fuel valves in the cockpit for the fuel management.
- Fuel gascolator with drain sump
- Oil thermostat
- Electric starter
- High capacity LI-FE 12.4 Ah 12V battery
- 12 VDC (40A) payload bus, 12 V aircraft bus
- All throttle control cable bowdens made from polyamide
- 12VDC plug
- Wing heated Dynon pitot tube with integrated AOA measurement capability, and necessary wing modification
- Tailor-developed propeller & spinner
- Wings, tail and fuselage cover made from light cloth
- Ground tie-down kit with anchors, ropes and tie down rings in the wing
- Rotax toolkit
- Removable wingtips on LAME, MALE & HALE models to reduce the hangaring wingspan to 12.15 m (39' 10.3") to fit in classic American-size T hangar
- Nose wheel undercarriage (Except HALE model): Steerable nose wheel type, oil/spring suspension, front wheel size 4.00 x 4, main landing gear, wheels size 4.00 x 6 mounted on a single composite struts equipped with Pipistrel type disk brake
- Tail wheel undercarriage (HALE model): Steerable tail wheel type, main landing gear, wheels size 6.00 x 6 mounted on a single composite struts equipped with Beringer type disk brake, steerable tail wheel size 200 x 50
- Engine Rotax: four -cylinder, four stroke, dual ignition, integrated gearbox, version with 2 oil coolers and customized engine cowlings optimal for extra hot climate conditions, engine overload clutch, Titanium high performance exhaust “Akrapovic".
- Reinforced wings with sizable hard points on each wing up to 30 kg payload capability at each wing (size and shape TBD) with the wing inner tubes from the cockpit to the hard point for the needed power supply
- Structural provisions for belly mounted gimbals in the fuselage (1 central fuselage mounted gimbal, turret diameter up to 400 mm)

Manned and optionally piloted platforms include also:

- Instrument panel with, Battery Master switch, Generator master switch and alternator master switch Key magneto switch, 1 switch with automatic fuse for 12 V socket, Automatic fuse for Efis
- Transponder Funke TRT800 mode S, ADS-B out with antenna Radio Funke ATR 833 with 2 headsets HD-1000 and intercom
- SkyView HDX 1100 - Single Screen multifunction engine & flight instrument with all flight and engine instruments functions, Inc. EMS, OAT, F.P., MAP, F.P.,
- GPS with perpetual GPS licence, fuel flow control, electronic logbook, fuel and all engine values, hour meter, clock, flight data recorder, slip indicator, magnetic compass, etc.

Further presented is a choice of platforms with their main characteristics and capabilities. Depending on the actual payload and the type of flight-control system (OP, fully unmanned) and its capabilities, additional performance adjustments and/or limitations may be introduced.

Maximum Zero Fuel Weight explanation:
The difference between aircraft empty weight (for example 370 kg) and MZFW is the payload than can be carried in the fuselage (for example Autopilot, gimbals, additional fuel etc).
If you wish to carry out the mission with the complete amount of fuel, the effective payload carried in the fuselage is MTOM minus weight of fuel, minus aircraft empty weight.
This is to give flexibility to the user to choose to fly with either more payload or more fuel (long mission time).
Weight above MZFW value must be carried in/on the wings.

Models:

MODEL	LASE (Low Altitude, Short Endurance)	LAME (Low Altitude, Medium Endurance)	MASE (Medium Altitude, Short Endurance)	MAME (Medium Altitude, Medium Endurance)	MALE (Medium Altitude, Long Endurance)	HALE (High Altitude, Long Endurance)
Wingspan	12,4 m	15 m	10.7 m	10,7 m	15 m	15 m
Removable wingtips	NO	YES	NO	NO	YES	YES
MTOM	600 kg @ 4,0 g	600 kg @ 4,0 g	600 kg @ 4,0 g	750 kg @ 3,8 g	Up to 850 kg @ 3,0 g	Up to 900 kg @ 2,5 g
MZFW	530 kg	530 kg	555 kg	600 kg	650 kg	770 kg
Fuel capacity	2 x 30 liters each tank	2 x 50 liters each tank	2 x 50 liters each tank	300 liters, carried in 4 tanks	370 liters, carried in 4 tanks	370 liters, carried in 4 tanks
Undercarriage	nose wheel type	nose wheel type	nose wheel type	nose wheel type	nose wheel type	Tail wheel type
Certified engine	Rotax 912 A2, 80 Hp 2 Carb, V3 engine gearbox and governor	Rotax 912 A2, 80 Hp 2 Carb, V3 engine gearbox and governor	Rotax 912 S3, 100 Hp, 2 Carb, V3 engine gearbox and governor	Rotax 912 iSc, 100 Hp, fuel injection, V3 engine gearbox and governor	Rotax 912 iSc, 100 Hp, fuel injection, V3 engine gearbox and governor	Rotax 914, 115 hp, turbo charged, intercooler for extreme altitude
Propeller	Pipistrel 2 blade not certified carbon fiber mechanical variable pitch & feathered	Pipistrel 2 blade not certified carbon fiber mechanical variable pitch & feathered	MTV-33-1-A/170-200, 2 blade, EASA certified Hydraulic constant speed	MTV-33-1-A/170-200, 2 blade, EASA certified Hydraulic constant speed	MTV-33-1-A/170-200, 2 blade, EASA certified Hydraulic constant speed	MTV-34, 3 blade, EASA certified Hydraulic constant speed
Baseline certification	Structure and system according to ASTM F2564.	Structure and system according to ASTM F2564.	Structure and systems EASA CS-LSA, modifications delta from baseline according to ASTM F2245	Structure and systems according to ASTM F2245 with elements of CS-VLA	Structure and systems based on ASTM F2564.	Structure and systems based on ASTM F2564

Performances/Limitations:

Max altitude	12,000 ft	12,000 ft	18,000 ft	18,000 ft	18,000 ft	30,000 ft capable, most mission time 18.000 ft
Typical operating altitudes	2,000 -12,000 ft	2,000 -12,000 ft	2,000 -12,000 ft	2,000 -12,000 ft	2,000 -15,000 ft	10,000 - 22,000 ft
Speed in transfer to/from work area	110 KTAS	100-110 KTAS	120-130 KTAS	120-130 KTAS	100-110 KTAS	100-110 KIAS
Loitering speed	70 - 90 KIAS	50 - 75 KIAS	70-90 KIAS	70-90 KIAS	55 - 75 KIAS	65 - 80 KIAS
Endurance at transfer speeds	Up to 4 hours	Up to 6 hours	Up to 5 hours	Up to 15 hours	Up to 24 hours	Up to 20 hours
Endurance at loitering speeds	Up to 6 hours	Up to 8 hours	Up to 8hours	24+ hours	Up to 33 hours	Up to 25 hours
Gust load speed (turbulence penetration)	90 KCAS	86 KIAS	120 KCAS	120 KCAS	90 KCAS	87 KCAS
Airspeed limitation with equipment carried on external pods*	108 KCAS	108 KCAS	108 KCAS	108 KCAS	108 KCAS	108 KCAS

*before GVT and flight test is performed

PRICE LIST

Platforms prices

LASE	€ 240,000.00
LAME	€ 250,000.00
MASE	€ 280,000.00
MAME	€ 320,000.00
MALE	€ 370,000.00
HALE	€ 430,000.00

Export prices ex works Pipistrel, Slovenia

Possible Options:

Design of the new models of platforms – flat rate	TBD
Design changes of the existing platforms – flat rate	TBD
Design changes of the existing platforms – flat rate	TBD
Test flights support – flat rate	TBD
Customization Engineering, prototyping, testing, documentation, certification man work / day	€ 900.00
Fuel dump capability via electrically controlled valve on fuel return line, also to be used for single point refueling capability	€ 6.000
Closed tailor-made transport trailer	€ 21,000.00
Closed tailor-made transport trailer with installed solar power station	€ 33,000.00
power modules, Multiple 24V and 240 VAC electrical outlets, 3,6 kWh Integrated storage battery)	TBD

Spare parts package for regular maintenance covering 1000 hours of operation	€ 7,000.00
Heat shield over the exhaust stack and additional muffler to minimize heat signature	TBD
Antireflective surface coatings	TBD
lightning protection	TBD
Maintenance training delivered at Pipistrel HQ for 2 aircraft engineers per aircraft one week	€ 15.000
Type conversion training delivered at Pipistrel HQ for 2 licensed pilots per aircraft	€ 15.000
5 year telephone and e-mail remote support	€ 2.000
Export Customs Procedure / EUR 1 / ATR document	€ 100
Export Documents Outside EU Costs	€ 130
Apostile / CAA Certificate of No registration / Bill of sale document	€ 300
Cost of loading and special supports in the container - Price per aircraft	€ 600
Cost Of Transport by Road	1.7 EUR/KM
Transport By Sea	TBC
Other Documents to be done by request	TBC

Warranty, delivery time, ordering and payment conditions

The warranty for the platforms is 2 years or 500 hours of flight what expire first.

The standard delivery time for the platforms is 8 months. For the orders larger than 6 per month, Pipistrel and partner should agree the delivery time from case to case.

- The delivery time for the services and supports should be agreed.
- All prices are considered ex works Pipistrel factory in Slovenia or Italy, Slovenian VAT excluded.
- Pipistrel can take care of the transport to partner location of choice. In this case Delivery Incoterms and Ownership and Rights Transfer: All physical Deliverables shall be delivered on CIF (INCOTERMS 2016). Title to the Deliverables shall be transferred to partner at the same time as the risk is transferred according to the agreed Incoterm. Should a delivery from Pipistrel be damaged or defective upon receipt by partner and should this damage be due to acts, which Pipistrel is responsible for or bears the risk for (e.g. damage occurred before transportation), Pipistrel shall use its best efforts to rectify the defect as soon as possible. If the Pipistrel will take care of the transport, he should bear the risk for damage occurred before transportation and cover all the costs.
- Payment conditions for the platforms: 50% at the order, 30% commencement of production at Pipistrel, and 20% after the PDI and before delivery ex works Pipistrel facility for shipment.
- Payment conditions for the options shall be agreed case by case.
- The costs of listed options and goods or services shall be paid monthly after the delivery by regular bank transfer and arrive to Pipistrel bank account within 30 calendar days after the invoice is issued.
- Eventual additional costs or additional partners requests, such as item transport costs, travel and accommodation costs of Pipistrel technicians and experts to partner location, accommodation costs etc. are to be borne by partner.
- Partner travel cost and the accommodation cost in Slovenia are to be paid by partner.
- Partner may pay from different accounts, Pipistrel will accept such payments as part of this contract**.**

Applicable remittance (bank) accounts of Pipistrel:
Pipistrel d.o.o., Goriška cesta 50a, SI-5270 Ajdovščina, Slovenia, Europe

- IBAN no. SI56 0475 1000 0104 859, SWIFT/BIC: KBMASI2X, NovaKBM d.d., Ulica Vita Kraigherja 4, SI-2505 Maribor, Slovenia;
- IBAN no. SI56 0510 0801 0809 187, SWIFT/BIC: ABANSI2X, bank name and address: Abanka d.d., Slovenska cesta 58, SI - 1517 Ljubljana, Slovenia;
- IBAN no. SI56 2900 0005 1297 046, SWIFT/BIC: BACXSI22, bank name and address: UniCredit Banka Slovenija d.d., Smartinska 140, SI-1000 Ljubljana, Slovenia.

For more information, please do not hesitate to contact us any time,
best regards
Ivo

PIPISTREL

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