"IdF"AIRCRAFT/UAV SPECIFICATION

"**Ile de France**" (IdF)©® is the name of this tail-first "canard" aerodyne (the main wing and propulsion unit are at the rear of the plane) based on a new concept with a double pentagonal fairing and twin-engine or twin turboprop configuration.
1996, saw the starting point for this adventure with the construction of a static model with a 2,28 m wingspan.
Between 1997 and 2000, a number of other flying models of the same size were flight tested.
It is planned to build two- and four-seater ULMs, business aircraft for up to 8 or 10 passengers, and a UAV. Wingspan of the UAV will be adaptable according to equipment and mission (surveillance of forests, drilling rig platforms, frontiers, towns, etc.). It will be of furtive design and undetectable above an altitude of 5,000 m, and possessing high flight endurance and payload capacity.
Equipped with very low mass, high-performance engines running on kerosene and mounted on the inner third of the wing, with constant speed drive (CSD) contra-rotating pusher propellers placed in a forward inlet recess in the double pentagonal fairing.
The aerodynamic efficiency of this innovative system increases lift (CL) and thrust, inducing a significant reduction in drag (CD) and excellent flight performance at low speeds and high AOA.

Optimum safety

Drift and crosswind: crosswind effect on the lateral stabilisers and is best compensated by propeller blast at the inlet and outlet of the pentagons, and becomes very low due to the wing surface of the high lateral plane (1.32 m²), inclined at an angle of 50°, and the initial force of the crosswind drops to 44%. This force also drops to an insignificant level on the lower horizontal lateral plane and on the shell fuselage.

Example: a 20-knot crosswind has the same force as that for a maximum wind speed of 10 knots!
Equipment: this aircraft will be equipped with a BRS (ballistic recovery system). This ballistic pyrotechnic survival system deploys a parachute in a dangerous emergency situation.
Line of flight: due to its light weight, power, low total drag, form and wing surface, and the absence of a critical engine, this aircraft should ensure a satisfactory line of flight in the event of failure of one of its two engines.

Initial commercial approach to the dimensions and performance of the four-seater version:

Wingspan: 12.72 m	Track: 4.20 m	Wing load: 736.36 N/m^2
Length: 8.6 m	Wheelbase: 3.84 m	Propulsive power: 2/3 of 5.4 kg/ch
Max. height on ground: 2.14 m	Offset: 25°	Laden weight: 800 kg
Aspect ratio: 8.6	Wing taper: 0.41	Cockpit inside width: 1.15 m
CL/CD: 20.04	Retractable tricycle undercarriage	Cabin length: 2m/ with luggage: 2.5 m
Hook angle: 11°	Wing surface: 18.7 m^2	

Theoretical speeds: Max. CL/CD: 123 kts
Vso: 45 kts, Vsi: 55 kts, Vno: 210 kts, Vfe, Vne and Va and other speeds (established at time of build)
Takeoff distance: 200 m — Landing distance: 150 m
Min. landing speed without flaps: 61.5 kts — Min. landing speed with flaps at 40°: 50 kts
Aircraft version performance (400 kg dry)
- With 4 passengers (4 x 70 kg) = 280 + 50 kg luggage + 72 kg fuel (100 litres) = 402 kg
- With 2 passengers (2 x 70 kg) = 140 + 100 kg luggage + 162 kg fuel (225 litres) = 402 kg

Hydrogen UAV aircraft version performance (400 kg dry)
Wingspan and AOA can be increased from the wing.
- Propeller aircraft/UAV version, autonomy 18 h: 150 kg equipment + 345 kg kerosene (480 litres) = 495 kg
- Hydrogen aircraft/UAV version, min. autonomy 15 days: equipment + fuel = 495 kg

Noise

The silent aircraft is a long-standing dream of all manufacturers. The commercial success of an aircraft depends inevitably on the noise which it generates, for jumbo-jets in the vicinity of airports, and drones in terms of discretion.
For a propeller-driven aircraft, it is not the engine which produces the most noise but the propellers themselves, rotating at close to the speed of sound (ratio of travel time at the blade tip for one rotation).
If our UAV is equipped with thermal engines and three-blade propellers the noise level is reduced by half. However, a hydrogen-powered UAV, identical propellers driven by electric motors will make the UAV practically undetectable even at low altitudes.

Economy, speed and range

Each engine should consume 15 litres of kerosene per hour, or max. 30 litres for two engines.
The cost with aircraft flying at 65% power at 135 kts (approx. 250 km/h) would be about 20 litres per hour, or € 9 for 250 km or € 3.6 per 100 km. On this basis, a flight from Boston to Washington would come out at about € 22 for four passengers, or € 5.5 per passenger.
This makes the trip much cheaper than by car, not counting toll charges, with no fatigue element and three times faster.
With full tanks (240 litres), the aircraft would have a range of 2,750 km (11 hours' flying time + 1 hour margin).
The potential range of high and low-speed flight is very wide. The outer wings are retractable, and can be dimensioned differently to meet customer requirements. All flight domains can be addressed with this concept.
The aircraft can also be equipped with the new "Minix"©® anti-vortex and induced drag reduction system.

Pilot comfort

The absence of vibrations generated by the two new high efficiency engines, located at the rear of the wing and equipped with contra-rotating three-blade pusher propellers, make this aircraft a very quiet, extremely stable, easy to handle, smooth to control and quick to respond to a demand for full power. Another big advantage of these tail-first "canard" aircraft is that they do not stall but sink and "porpoise". The proportional stability of the wing surface of this type of aircraft, with improved lift and reduced total drag (high CL/CD) and enhanced energy efficiency with no stabilisers at the rear of the aircraft. The one-piece, jettisonable, sliding Perspex canopy is of the high-visibility glider type.

Marketing plans

Quadruple market: ULMs, private aircraft, executive aircraft and UAVs.
The concept covers an aircraft powered by heat engines or electric motors (the selected fuel is safe, new generation solid hydrogen presenting no storage problems).
A business plan for the period up to 2010 has been drawn up, and a business corporation will be formed. The patent and the "Ile de France"©® trademark, representing part of the capital contribution, will be measured by a specialist capital contribution assessor.

Manufacture of the 1st "Ile de France" version:	2-seater ULM with heat engines or electric motors
Manufacture of the 2nd "Ile de France" version:	4-seater ULM with heat engines or electric motors
Manufacture of the 3rd "Ile de France" version:	6-seater executive aircraft
Manufacture of the 4th "Ile de France" version:	hydrogen powered aircraft/UAV
Manufacture of the 5th "Ile de France" version:	twin-engine or twin turboprop aircraft/UAV
Manufacture of the 6th "Ile de France" version:	8- and 10-seater executive aircraft

Customers are looking for a comfortable, attractive aircraft, easy to fly at slow or high speed, with short landing and takeoff distances and with a very high safety rating.
Aircraft/UAV IdF Web site: www.idfr.eu

The aircraft or UAV specifications and business plan (2006 - 2010) can be supplied on request.