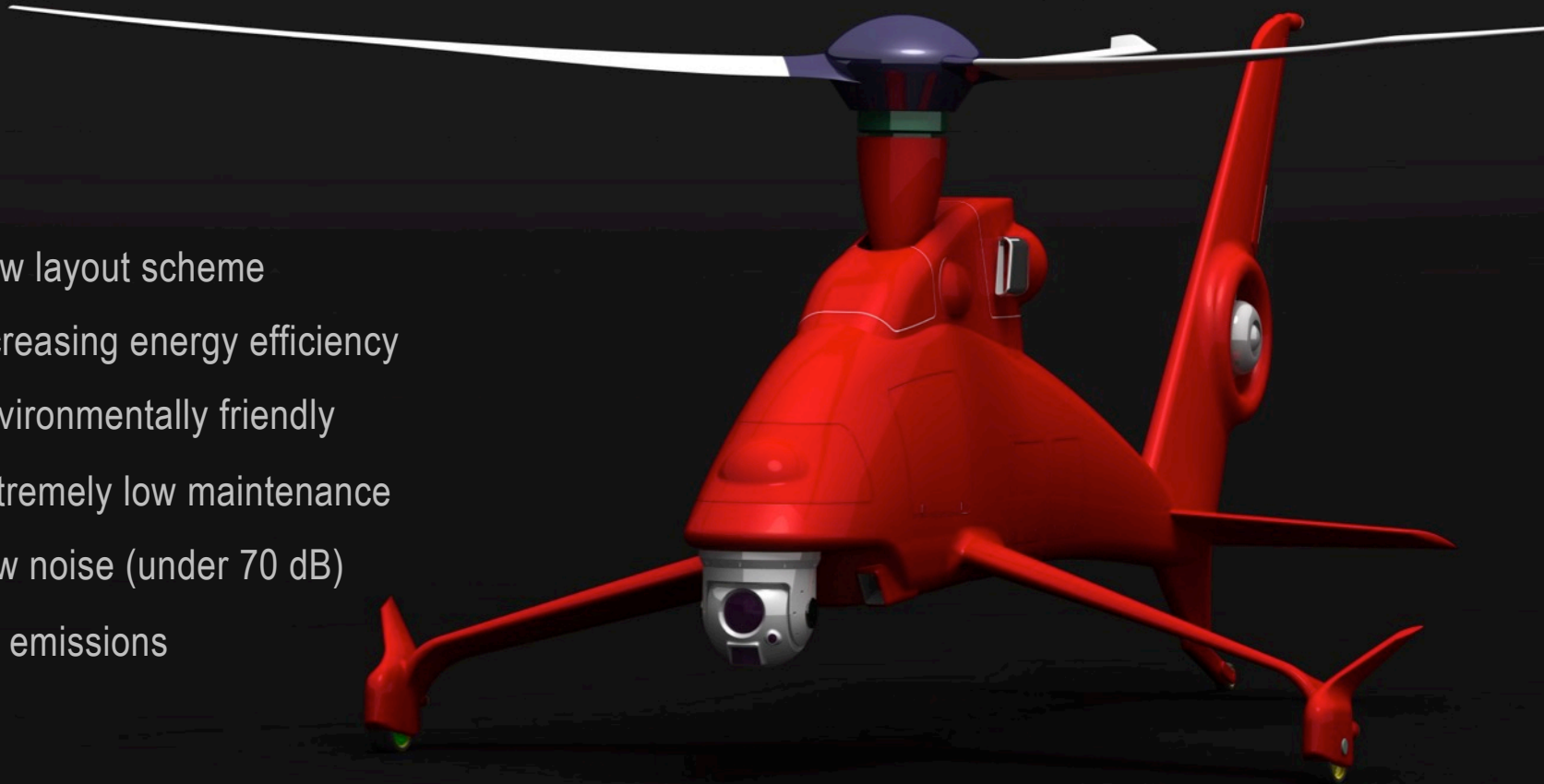


THE USING OF ELECTRIC MOTORS - NEW OPPORTUNITIES FOR AIRCRAFT

- New layout scheme
- Increasing energy efficiency
- Environmentally friendly
- Extremely low maintenance
- Low noise (under 70 dB)
- No emissions



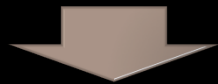
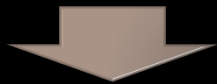
We didn't invent the technology, we invent its implementation.

TWO DIRECTIONS OF DEVELOPMENT OF A NEW CONCEPT



The overall power package inclusive of:
- Electrical engine

Takeoff mass 350 kg



Piloted

Payload 1 pilot

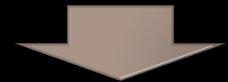
Drone

Payload 100 kg

The overall power package inclusive of:

- Electrical engine
- Auxiliary Power Unit (Jet engine)

Takeoff mass 1200 kg



Piloted

Payload 1 pilot+3 passenger

Drone

Payload 400 kg

TWO DIRECTIONS OF DEVELOPMENT OF A NEW CONCEPT



Power System
Up to 500 kg

Lithium-Air Battery

Ultracapacitor



Electrical engine
Main rotor

Electrical engine
Tail rotor

Power System
Up to 1600 kg

Lithium-Air Battery

Ultracapacitor



Electrical engine
Main rotor

Electrical engine
Tail rotor

Auxiliary Power Unit

Electric generator

Fuel tank



INNOVATIONS

Main rotor

In cruise flight the main rotor and its electrical drive can be tilted up to 40 degree, enabling the fuselage to remain at its optimum alignment with the airflow, thereby minimising aerodynamic drag for a reduction in both power demand and fuel consumption.

Electric drive

Reduces noise and increases the altitude.

Direct drive main rotor without transmission

This system reduces weight and reduces the cost of operation and maintenance.

Electro Mechanical Actuation for landing gear

This system is aimed at providing an alternative solution for taxiing a helicopter without rotor spinning (safety, "fuel" saving).

Electro Mechanical Actuation for primary flight control

The eventual removal of hydraulic systems requires replacement of rotor boosters with all electric actuators.

Electric Tail Rotor

This will replace mechanical tail rotor drive shafts, gearboxes and couplings. Key potential advantages include reduced drive train vibration, fatigue and noise, and overall weight savings and improved through-life maintenance.

THE FIRST INITIAL PROJECT (PILOTED)



1-seater Electric Helicopter

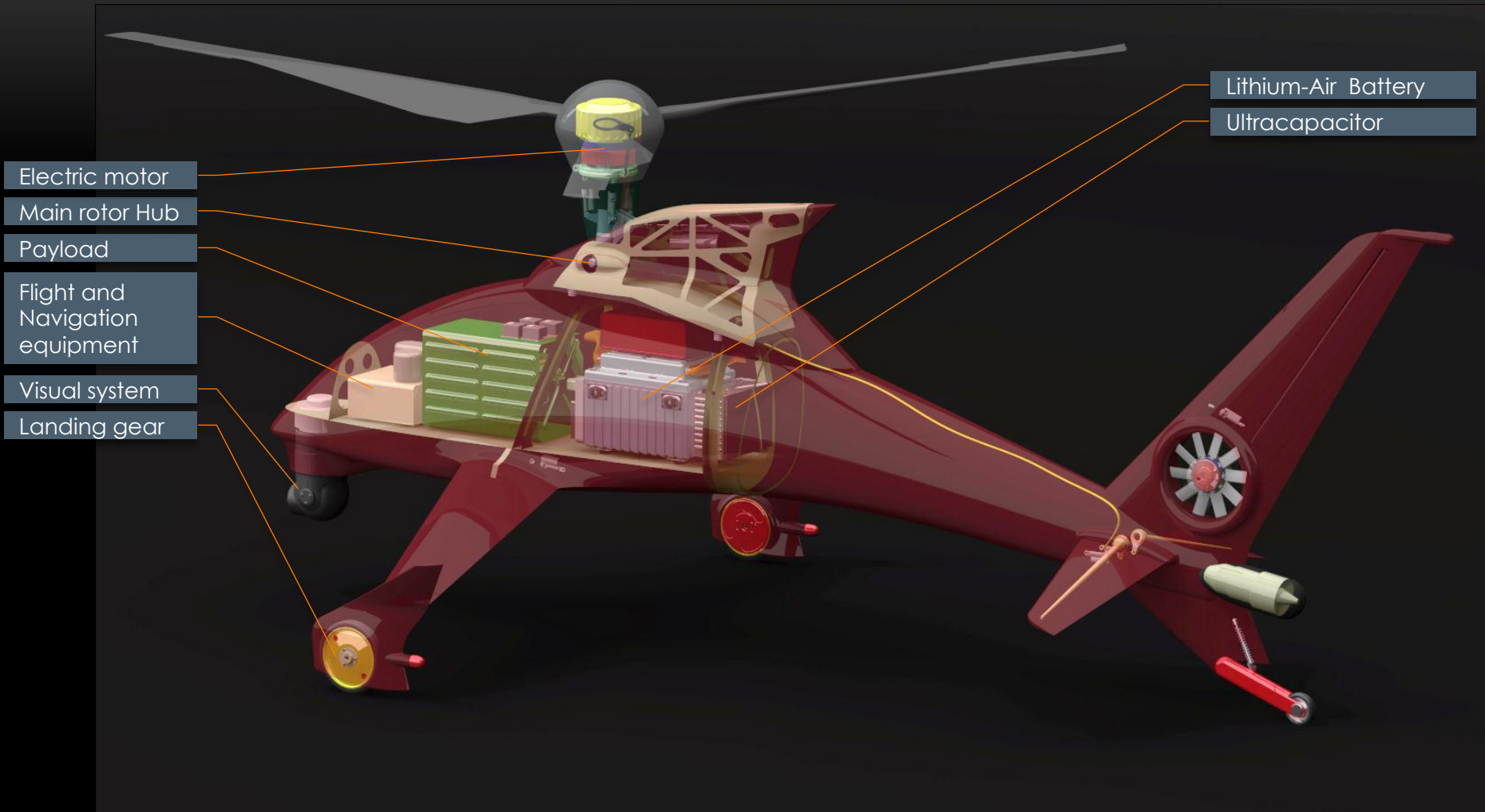
THE FIRST INITIAL PROJECT (PILOTED)



Takeoff mass	350 kg
Payload	100 kg
Power of the electric motor(Main rotor)	60 kW

Power of the electric motor(Tail rotor)	10 kW
Cruise speed	360 km/h
Flight time	up to 3 h (TBD)

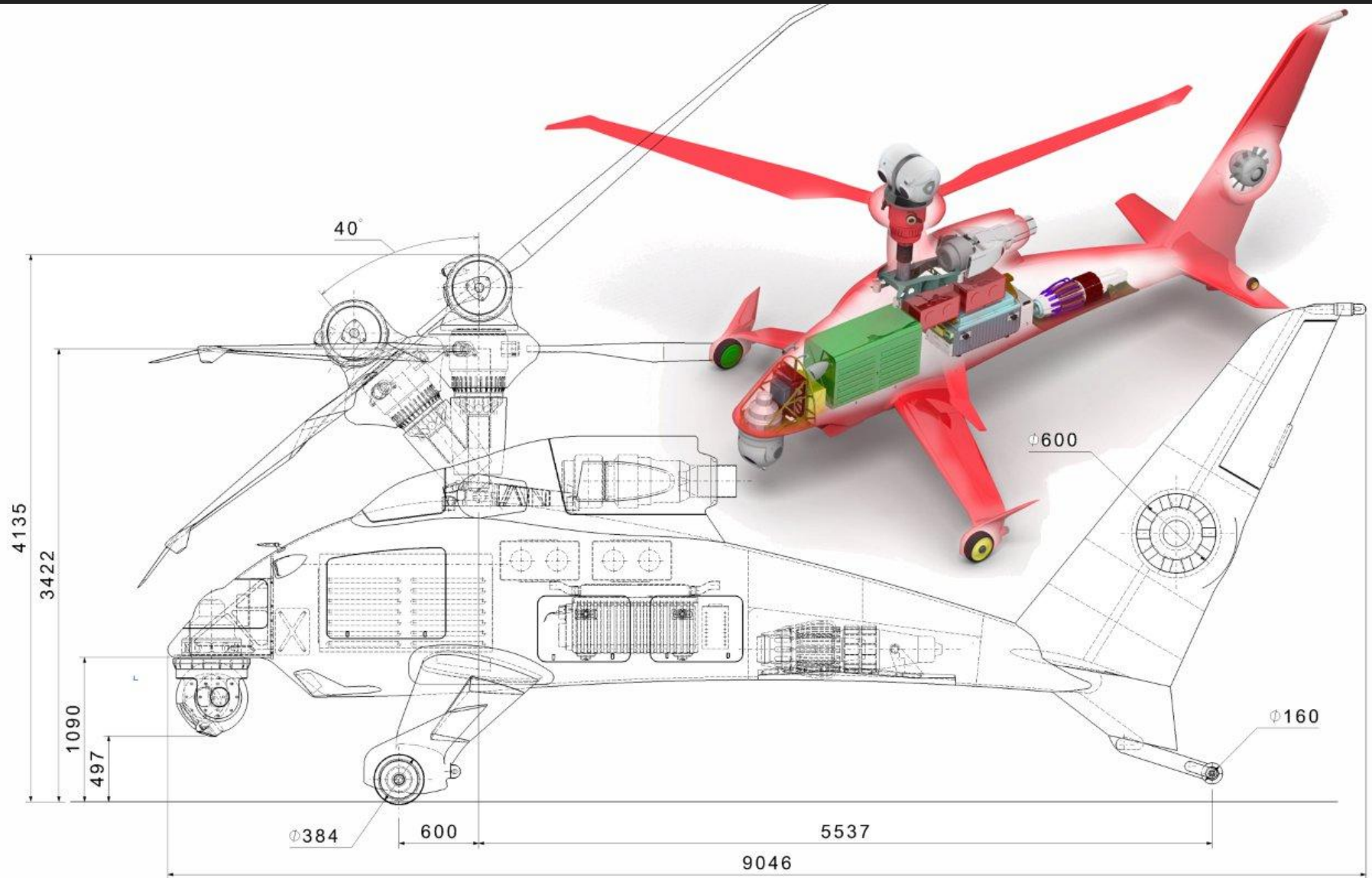
THE FIRST INITIAL PROJECT (DRONE)



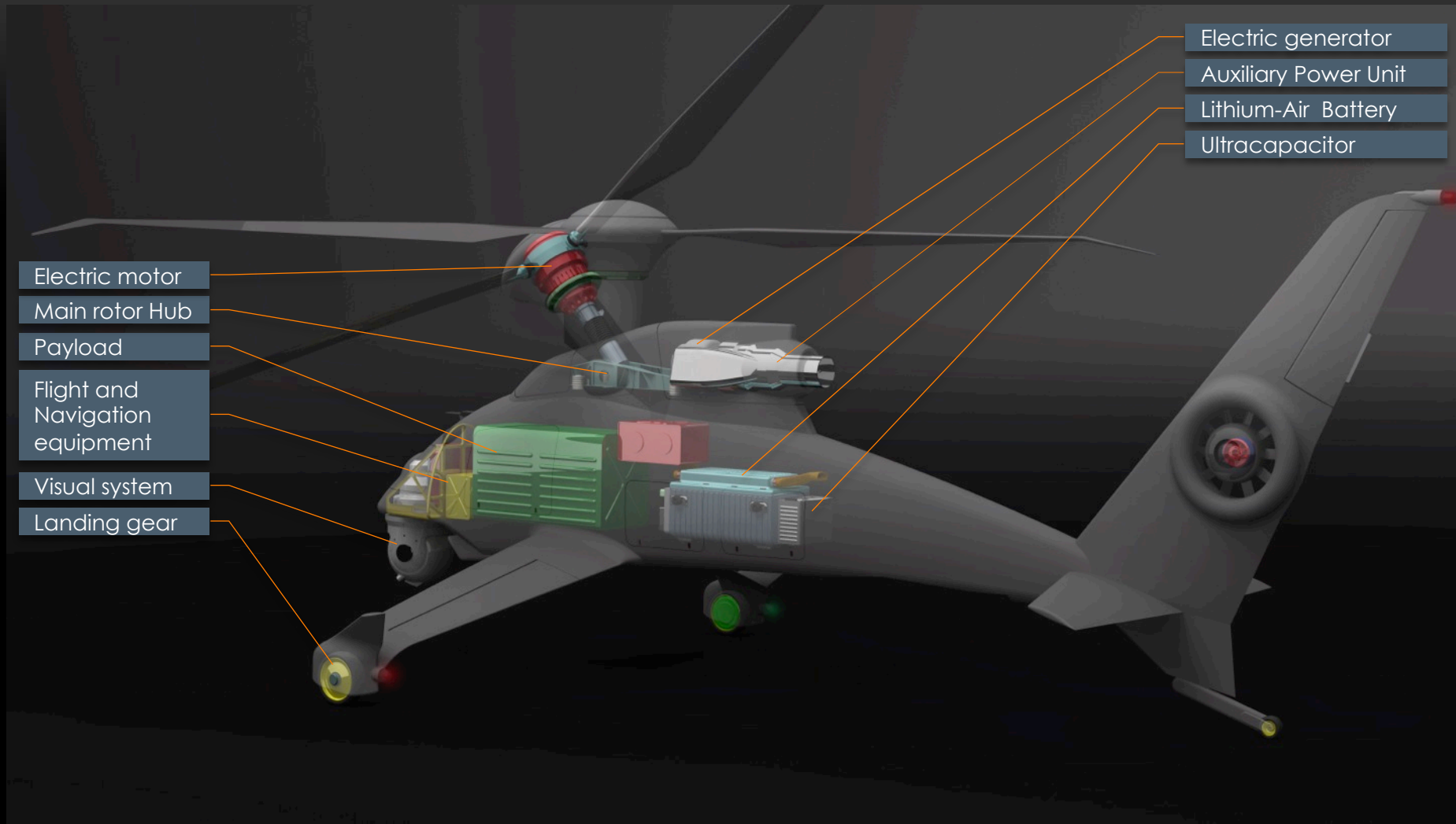
Takeoff mass	350 kg
Payload	100 kg
Power of the electric motor(Main rotor)	60 kW

Power of the electric motor(Tail rotor)	10 kW
Cruise speed	360 km/h
Flight time	up to 3 h (TBD)

THE MAIN VIEW OF DRONES



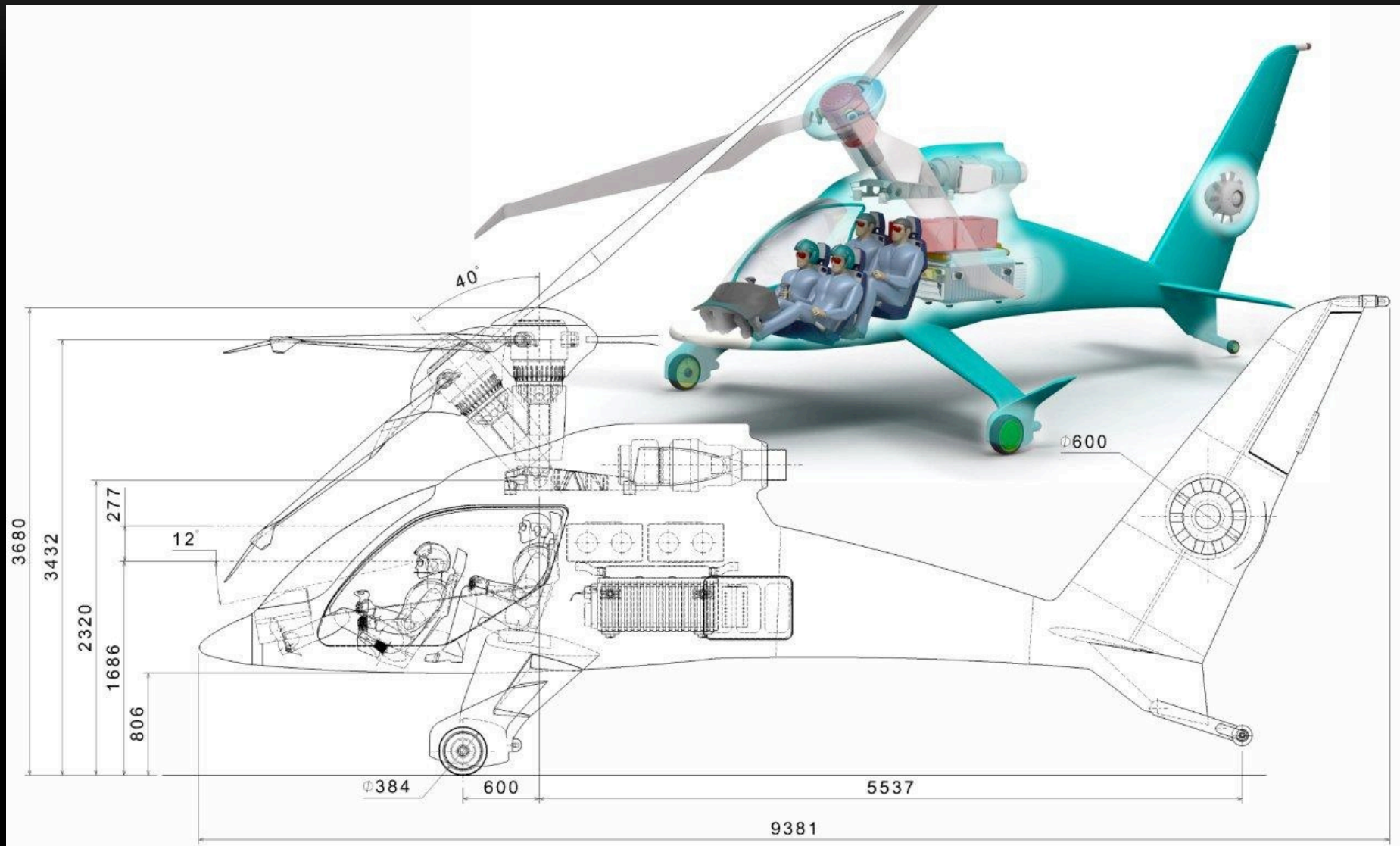
THE SECOND PROJECT (DRONE)



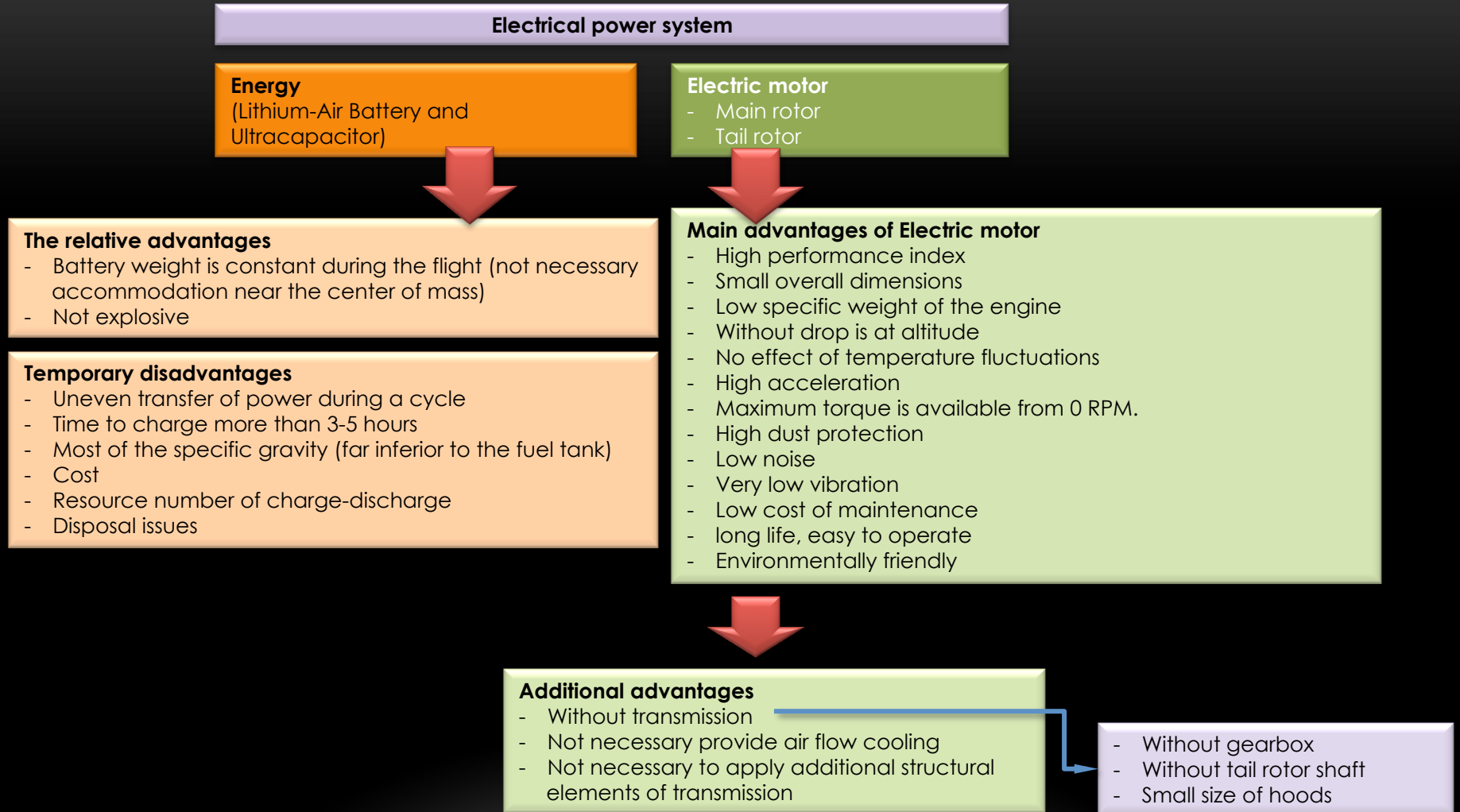
Takeoff mass	1200 kg
Payload	400 kg
Takeoff output APU	224 kW
Power of the electric motor(Main rotor)	220 kW

Power of the electric motor(Tail rotor)	20 kW
Cruise speed	420 km/h
Flight time	up to 6 h (TBD)

THE MAIN VIEW OF THE PASSENGER VERSION



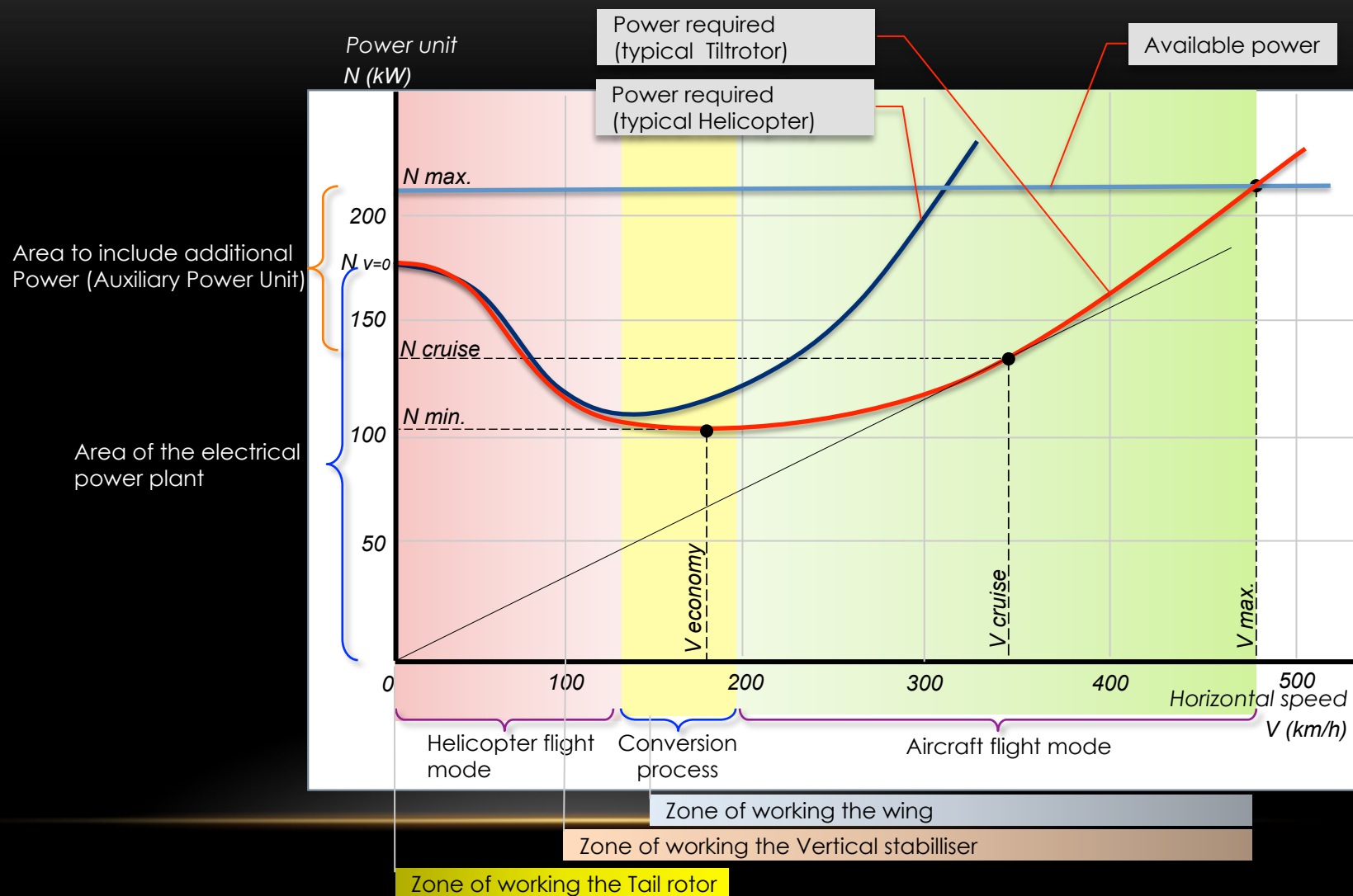
ADVANTAGES AND DISADVANTAGES



Explanation:

*with all the disadvantages of electric power system
can not significantly increase the efficiency of the
fuel tank and the heat-engine.*

DIAGRAM OF POWER REQUIREMENTS



IMPROVING ENERGY EFFICIENCY

The battery (capacitor) that could be shaped into body panels. Composite blend of carbon fibres and polymer resin is being developed that can store and charge more energy faster than conventional batteries can. At the same time, the material is extremely strong and pliant, which means it can be shaped for use in building the fuselage's panels. The battery can be recharged by solar panels for obtain additional energy

Initial capacitance approximately 68-80(F)
Rated Voltage 48(V)
Weight 16(kg)

Surface area to cover approximately
28 square meters.

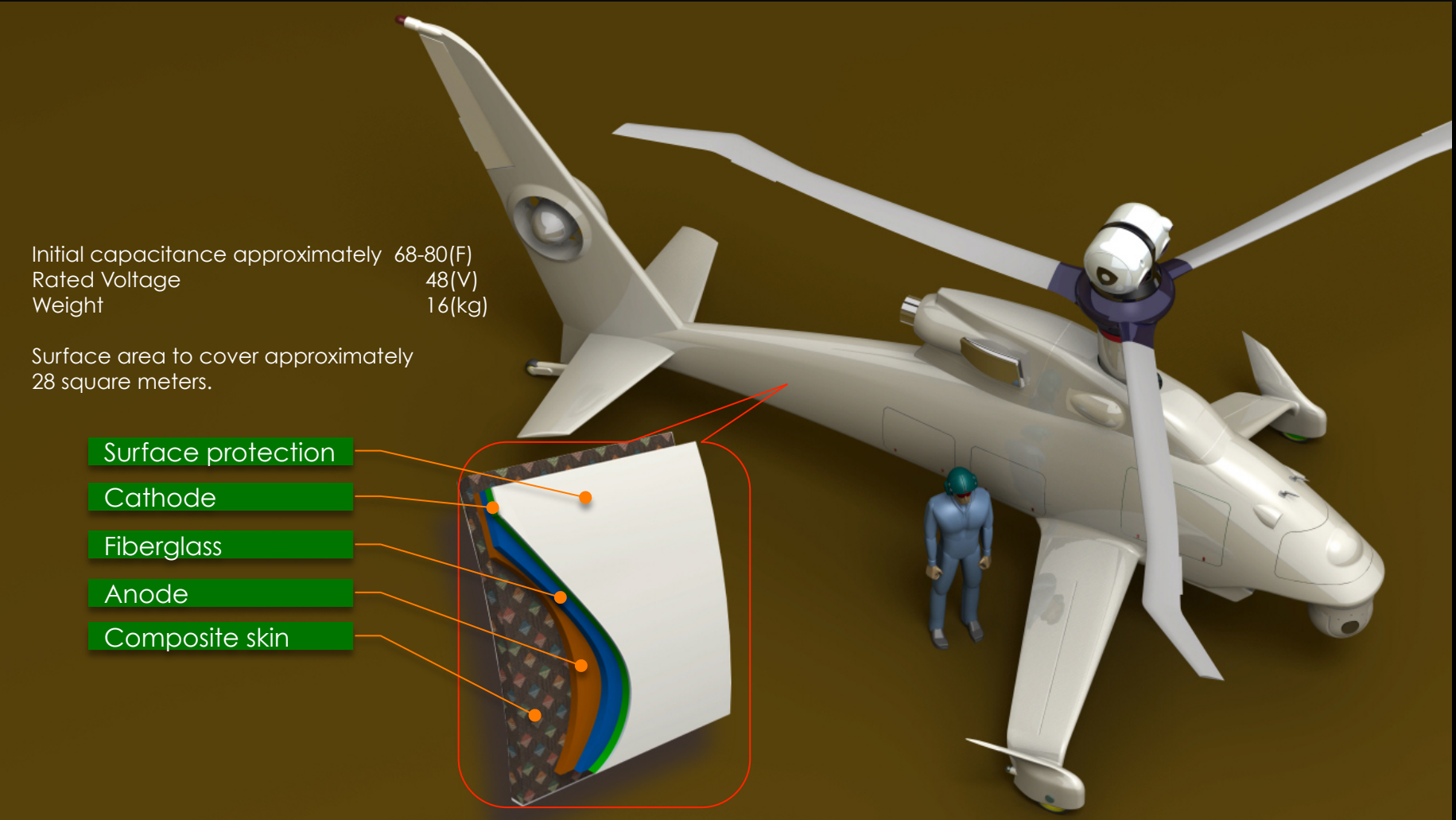
Surface protection

Cathode

Fiberglass

Anode

Composite skin



INVESTIGATIONS



Fuel cells

One of the way is implementation Fuel cells into the energy system. Researches are conducted for two fuel types of Hydrogen and Methanol. Development of implementation of receiving the electric power technology will be carried out generally on the pilotless aircraft. The main problem is inertness of system (increase in power for a short time).

ENERGY PROVISION

Portable charging station

Fuel cell station

- processing of gas and liquid fuels in electricity
- generating electricity with extremely low emissions

Solar cells station

- renewable energy
- eco-friendly

