

Experiences with the Archaeopteryx – footlauchable Micro Lift Sailplane



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A Dream of Mankind: Spread your arms, run, and fly!



Lilienthal, Derwitzer Apparat 1891



Ruppert, Archaeopteryx 2011

Archaeopteryx

1999 – 2003

Development, Construction and Testing of the Concept-Demonstrator at the ZHAW in Winterthur.

2006 – 2009

Development and Testing of the Series-Version by Ruppert Composite in cooperation with ZHAW and Industry-Partners.

2010 – 2015

Delivery to customers, small series production, intensive flying, flight-school, Cross Country Flights
Electric Motorised Version



Archaeopteryx

Airplane data

- Wing Span 13.6 m
- Wing Area 12.8 m²
- Length 5.7 m
- Flaps -7° to +70°
- Speed 30 ... 130 km/h
- Minimum Sink 0.5 m/s
- Best Aspect Ratio 28
- Empty Weight 54 kg (Basic Version, includes Parachute)
- Cockpit-Cladding 6.7 kg
- Recovery Parachute System 5.5 kg
- Max. Wing Load 12.8 kg/ m²
- Safe Loads: Manoeuvre +4 g / -2 g, Gust +5.1 g / -3.1 g



Extraordinary Features

- ✓ Minimum Weight (Empty Weight starting with 54 kg)
- ✓ Very slow Minimum Speed (30 km/h)
- ✓ Excellent Controllability in all Configurations
- ✓ Adaptability by Wing with Flaps
- ✓ Simple to fly - good stall behaviour
- ✓ Slow and precise thermaling,
minimum circle radius at 45° bank: 15 m

Versions

Now also available with electric propulsion

«Standard» – open



«Race» – with full cover



Technology



- Thin walled laminates
 - New technology: Wing integral Shell-/Ribs in Carbon
 - Integral design for fuselage components
 - Cockpit in differential construction out of integral components
 - Cockpit cladding separate (Aramit)
 - Completely manufactured in precise CNC-milled moulds
- manufactured like a high performance sail plane

Launch Methods

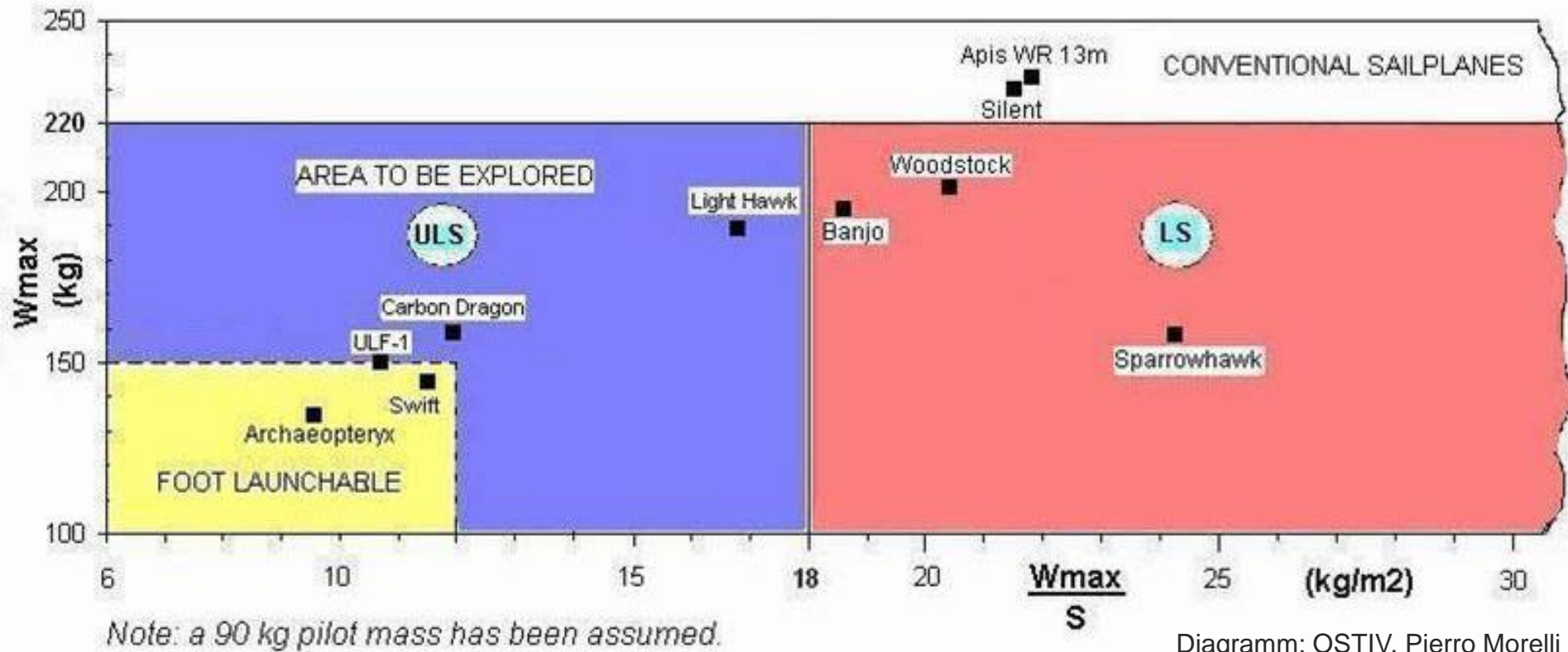
- ✓ Foot launch
- ✓ Bungee launch (without help of others)
- ✓ Trike-Tow
- ✓ Aero Tow (max. 100 km/h)
- ✓ Car Tow
- ✓ Winch launch (small winch)
- ✓ Self launch with electric engine

Landing characteristics

- ✓ Glide angle control with flaps
- ✓ Slow short final glide
- ✓ Precise landing on small area
- ✓ Touch down on wheel
- ✓ Possible to land with feet



Archaeopteryx prototype: The lightest two-mot of the world



Classification

Certification: Hang-glider (Germany UL-Sailplane)

Pilot licence: Basic training in double seater sailplane recommended

Sportive Classification: Hang-glider Class 2
Sailplane Class Microlift

Pilot Training

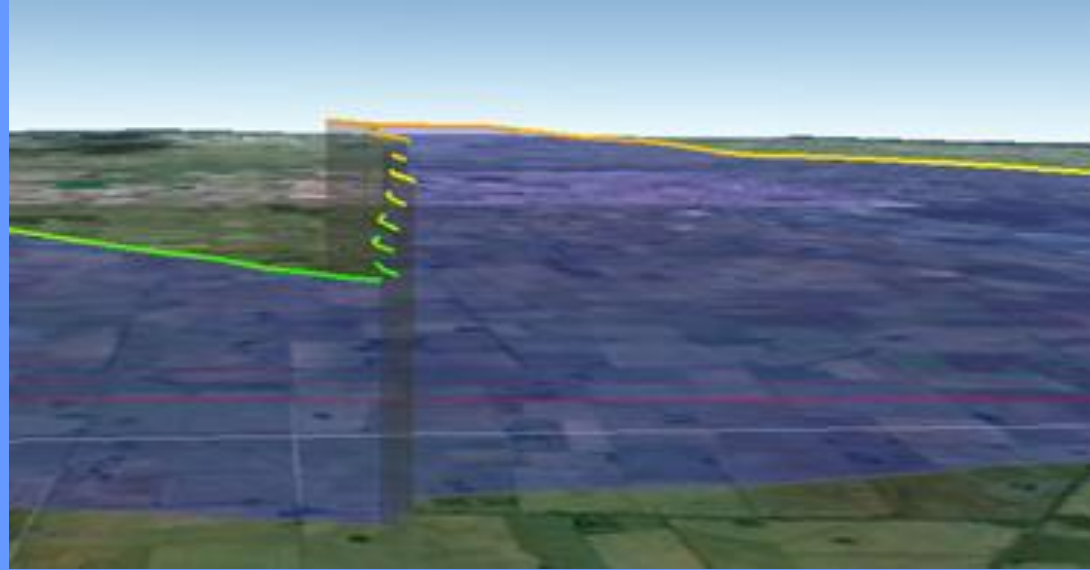
1. Basic Training in Sailplane
2. Ground instruction Archaeopteryx
3. Training flights with the Archaeopteryx after check flight with a flight instructor.
First Archaeopteryx flights with car launch
4. Flight examen, Licence (if recommended)
5. Instruction into alternative launch methods

Flying with the Microlift-Glider ...



- Is comfortable and relaxing.
 - Even with low cloud base and little operation height
- Good climb possibilities even in low altitude
- Slow hang soaring even at micro ridges
- Wave flights possible if wind speeds are below 60 km/h

The original feeling...



... of flying is especially sensed by light and slow flying :
to use micro-lifts, slow hangsoaring with relish,
Take-off from a hill or an airfield and stressless flying even in low
altitude.

Circling up in a narrow screw.

Cross country flying – of course!

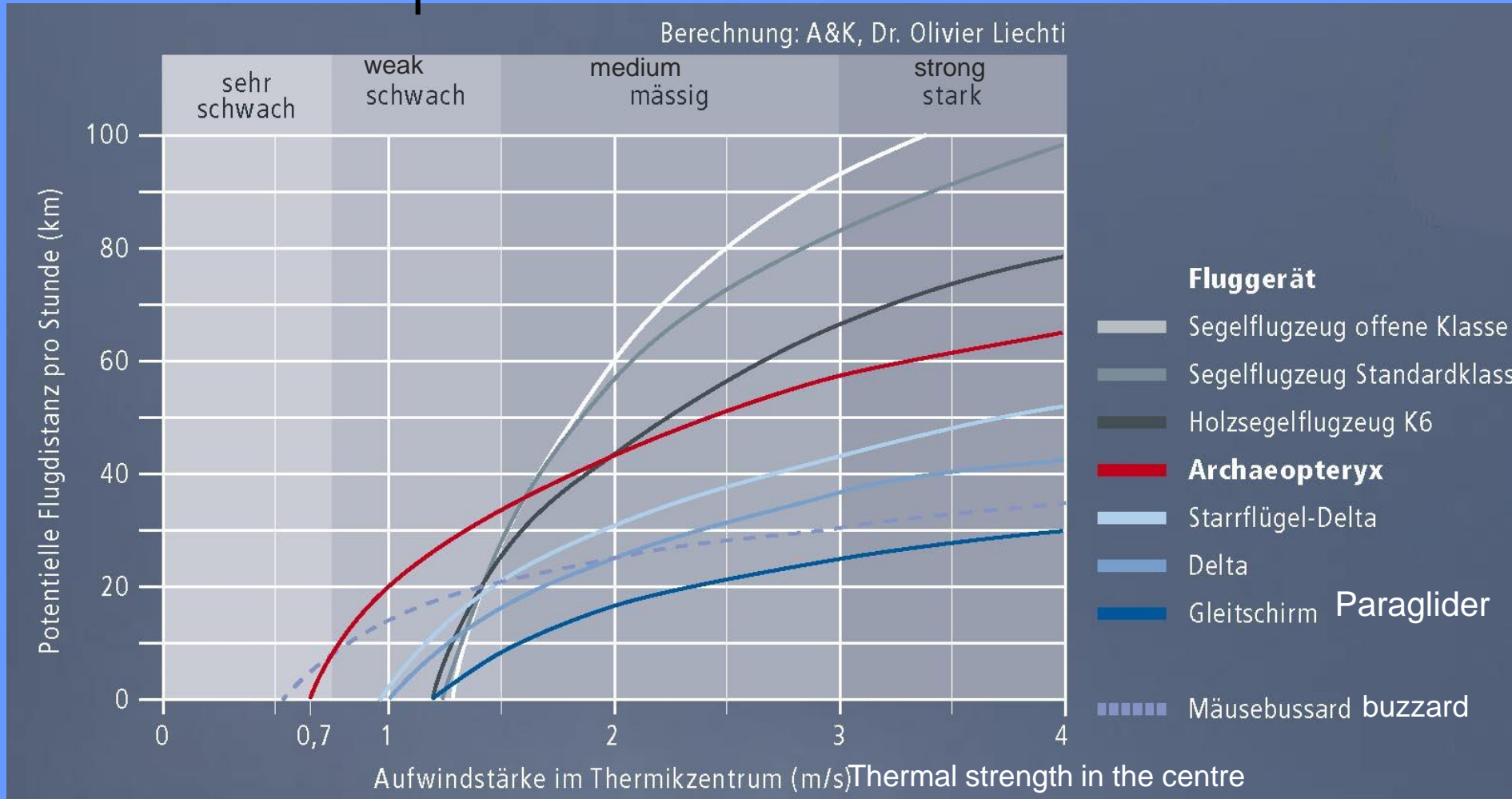
A certain sensitivity to wind belongs to extrem light sailplanes.

Archaeopteryx

Minimum sink like a modern sailplane –
Circling like a paraglider or bird

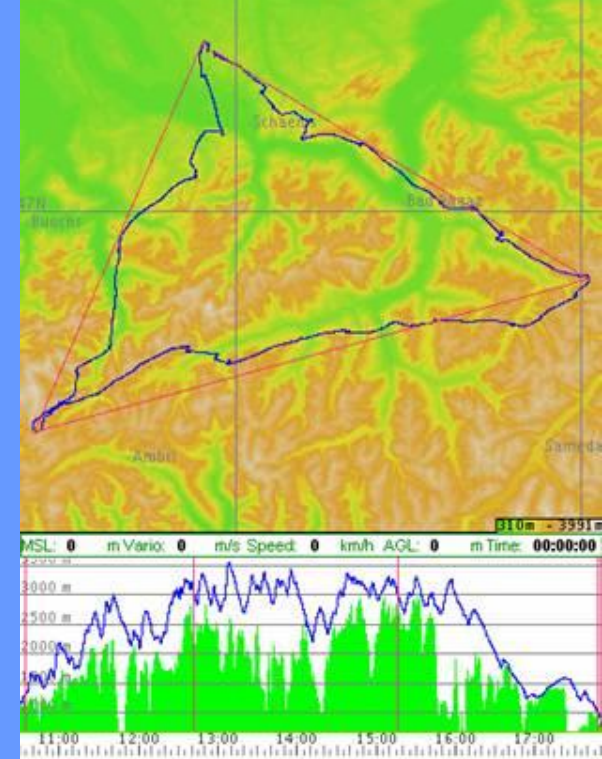
Climb performance

Gaining height starting from 0.7 m/s upwind in the centre.



Cross country performance

Classical cross country flights of the Archaeopteryx in thermals.



Can use early morning late afternoon thermals

Closed tasks (out and return, triangle, ...) up to:

Weak day	Medium day	Good day	Very good day
bis 100 km	100 – 200 km	200 – 300 km	300 – 400+ km

Safety aspects

- Half the speed of a „normal“ glider
- One forth of the mass
- Only 1/16 of the kinetic energy
- More recognition- and reaction time for the pilot
- Simple landing procedure to small fields
- Parachute recovery system

Recovery system



Specially developed, and tested 5.5 kg light Recovery system.

68 m² Parachute newest technology for lowest sink rate.

Small rocket ejection works in low altitude.

Pilot harness linked to parachute all the time.

Archaeopteryx

Keep seated!

Emergency situation in 2010.
Non allowed acrobatics at a flight exhibition in France.
Structur overloading due to overspeed after a first loop and pulling too much.
The wing held 8g!

The pilot released the parachute 3 secnds after the wing rupture.
After additional 3 sec. the sink rate with parachute stabalized at 4 m/s.

The pilot was not injured (and ordered a new Archaeopteryx).



Foto: Gabriel Cabos

Hang-glider customer

«The first winter showed us the tremendous opportunities with flight durations from 3 - 4h. Really new experiences. In Spring our expectations were more than satisfied by distance flights up to 550 km and FAI triangles up to 330 km.»

Sail plane customer

«genious light, can land everywhere, lifts like a feather, bungee launch is fantastic, easy to fly, aero-tow works also well, ...»

Paraglider customer

«It's fun! Much easier than expected. Using foot-launch to fly around the Mt.Blanc, nothing climbs better...»

Testpilot

«The Archaeopteryx opens new horizons of soaring.»

Archaeopteryx

Go for new horizons

