

# Autonomous Helicopter (ALF)

## Contact

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Historic monument conservation: Minster of Freiburg

## Basic data all for current airframe

Rotor diameter:	135 cm
Height (min):	41 cm
Width:	30 cm approx.
Length:	116 cm
Weight:	4,5 kg with 10 Ah/22,2V accumulator
Average noise level:	electric drive
Others:	no Bell-Hiller mechanics



Inspection of power lines

## Mobility

Climbing performance:	12 m/s
Propulsion:	brushless electric motor
Endurance:	> 25 min, depending on accumulator
Max. speed:	110 km/h
Payload:	2,5 kg
Steering:	roll/pitch/collective pitch/heading
Tether:	currently none, but possible
Control:	waypoint-mode, either programmed or by remote control
Manipulator:	none



## Communication equipment

Type:	Digital videolink(s) / several Digital up-/downlinks
Frequency:	2.4 GHz/5.8 GHz
Number of channels:	spread spectrum for digital up/down/8 channels for videolink
Other:	remote control via 2 independent channels with receiver voting

## Platform main capabilities

- all-weather, especially strong wind and ice-built-up conditions
- very manoeuvrable and fast; very easy handling under full computer control
- steering via waypoint-mode, either programmed or by remote control
- payload up to own empty weight
- can be equipped with carrier phase GPS (RTK)
- system can be adapted to almost any small scale helicopter
- video goggles with main flight data displayed, no further ground station required
- lots of built-in safety like in-flight system restart, autorotation and simple mechanics
- small package, even smaller for long-range transport
- start-up time out of transport box: 5s (warm), GPS-lock-time (cold)
- quiet and low radar and thermal signature



Inspection of bridges