

# Autopilot for a small Unmanned Aircraft

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This kind of small unmanned aircraft is called Remotely Piloted Vehicle (RPV). The experimental plane was intended for reconnaissance, a project of the Industrieanlagen-Betriebsgesellschaft (IABG).

1977-1978 the former Ingenieurbüro Dr.G.Hoffmann had developed the autopilot. The whole system consisted of the radio controlled electronics, a three-axis gyro, a three-axis magnetometer, pressure transducers, an accelerometer and the servo mechanisms. The next page shows the complete avionics system. Because of the very low weight we had to develop a strap-down system with computer based horizon instead of a mechanical platform.

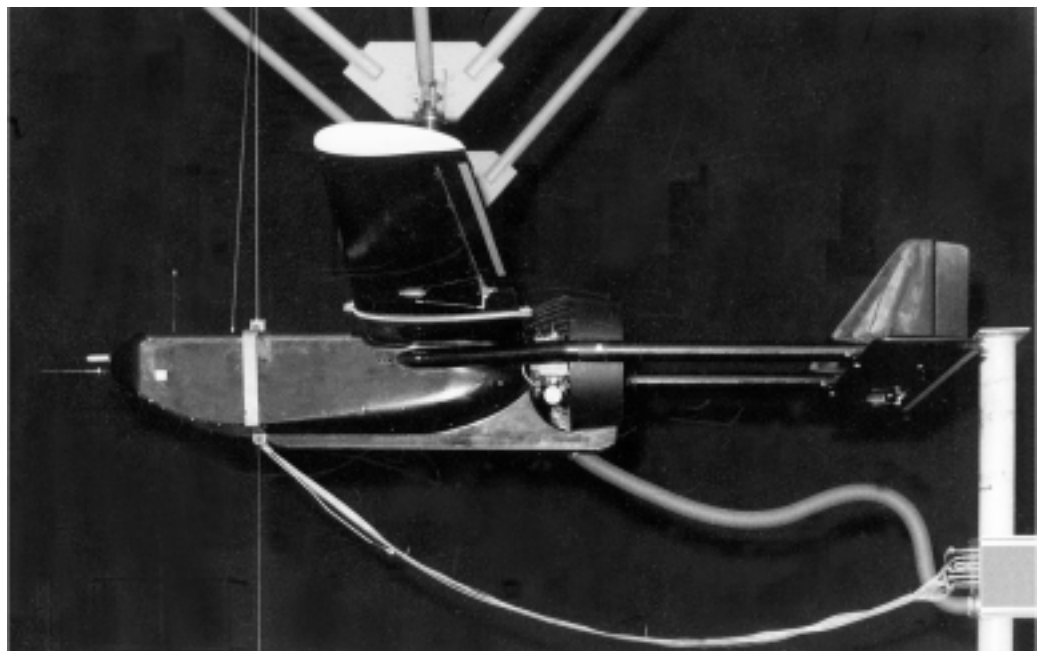
For the ground tests we made a high speed three-axis turntable, which worked in the loop. Gust models and a synthetical view through an onboard camera were helpful for testing the handling quality. Analog-Computers and one 8086 microprocessor with analog peripherals simulated the plane and the environment. The altitude was simulated by a pressure generator. And any onboard avionics was included.

We had the great pleasure to use the equipment of a Computing Center (Mechanikzentrum) of the Technische Universität Braunschweig. Special thanks to director Dr.Klaus Andresen, who provided also the spectra computation.

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Test in the windtunnel. Many thanks to Prof.Dr.Peter Hamel, director of the Department for Flight Mechanics of the Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, DFVLR, DLR in Braunschweig.

Photo by courtesy of DFVLR.



The plane is launched by a catapult and lands by parachute. The first flight was successful.

Photo by courtesy of IABG, outpost for field trials in Lichtenau.



# Remotely Piloted Aircraft: Guidance and Control System

