

## Measurement technology for environmental research

*enviscope GmbH* provides **service for the science community**. Our main focus is the development and adaptation of measurement equipment for applications in environmental research. We act as an interface between the scientific requirements set by researchers and technically feasible solutions to stay within the limits given by engineering and certification borders.

**The main working fields of *enviscope*** are related to airborne platforms. Our integrated concept covers the whole range of applied atmospheric science: instrument development, airborne field application and certification. We aim to link Science and Avionics.

### Instrument development

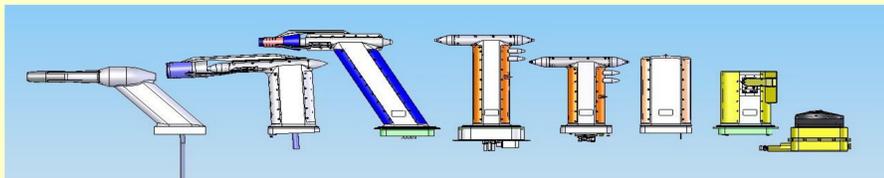
- Hardware concept development
- Design according to aircraft standards
- Vibration proof design / Shock mounts
- Adaptation to aircraft
- Data acquisition
- Software programming
- Real-time applications
- CAD modelling
- FEM analysis
- Strength analysis
- Fluid dynamic calculations
- Electrical layout and wiring
- Electrical load analysis
- EMC compatible design



AIRCROSS- AIRcraft TOWed Sensor Shuttle

Component development for the temporary installation on-board of research aircraft is the main task of *enviscope*. Our service comprises feasibility studies, conception, design, construction as well as documentation for subsequent certification.

Technically solutions dedicated for airborne employment need special care at early stages of the design phase in order to fulfil the certification requirements and the desired attitudes for rugged operation during field experiments



Variety of different inlets for HALO currently under development at *enviscope*: MAI, CVI, HASI, TGI-430, TGI-320, DUALER, HAI, SPARM



Stabilized solar radiation measurements on HIAPER

### Field support

*enviscope GmbH* has a long standing experience in supporting scientific field work. Since 1992 *enviscope* participated in numerous national and international research campaigns. We offer this service not only for our own aircraft but also for any other research activity.



Stop over in Casablanca during one of the SPURT flights. SPURT aimed for meridian cross sections of the northern hemisphere from North Europe to North Africa within only two days.

- Technical support during campaigns
- Logistical planning
- Aircraft ground handling requirements
- Flight regime planning
- ATC communication
- Permissions of authorities
- Hangar equipment
- Shipping and customs
- Airport logistics
- Providing of Internet connection
- Meteorological service
- Quick looks and data management
- Campaign organisation, briefings



Logistic support during Geophysika-campaign "RECONCILE" 2010 in Kiruna



### Aircraft operations

- Learjet 35A
- Partenavia P68 B
- Bell 206 Long Ranger



Learjet 35A, D-CGFD<sup>1</sup>



Partenavia P68 B, D-GERY

*enviscope* has a special concept to operate research platforms together with partners. We developed a basic research equipment for each of our platforms to enable the 'temporary use' only during the scientific employment.

The scientific equipment can be adapted and certified within the envelope of the basic modification as a research aircraft.

This concept gives us the opportunity to offer aircraft operations in a very cost-effective way.

*enviscope* provides several airborne platforms for scientific applications. We also help to integrate scientific instrumentation to any other airborne platform.



Bell 206 Long-Ranger<sup>(2)</sup> with ACTOS turbulenz platform

### Airworthiness certification

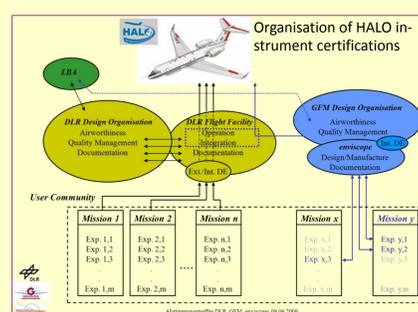
- Engineering
- Instrument specification
- Documentation
- Design drawings
- Certification programme
- Justification
- Qualification plan
- Organisation of external tests
- EMI Testing
- Tensile test equipment
- Rig for pressure border and leakage tests
- Installation manuals
- Type approvals, STCs or STAs
- DDP and EASA Form 1 issue

Certification processes become more and more complex for special mission aircraft. Depending on the certification basis of the aircraft different rules have to be applied for airworthiness certification, e.g. EASA, JAR, or national specifications.

To face the growing demands our concept is a cooperation with Gomolzig<sup>(3)</sup> Flugzeug und Maschinenbau GmbH (GFM) as an approved company covering the whole range of tasks. Aircraft maintenance (Part 145), Parts manufacturing (21G) and Design (21J).

The cooperation has been proved well within the past decade, leading to several STCs or STAs.

Beside a certification in full responsibility, *enviscope GmbH* can deliver adequate documents for Design Offices (DO) responsible for other aircraft such as GEOPHYSICA or Airbus A340 (Lufthansa Technik AG).



*enviscope* with its Partner GFM has established a close cooperation with DLR to certify new equipment for HALO and FALCON (both Annex II).

A DO-DO contract between DLR and GFM is approved by the national authority (LBA), allowing *enviscope* a real contribution for modifications of DLR research aircraft on demand of scientific users.

The user modification can be finalized by a STC or STA issued by GFM and delivered with all required documents for the installation on board DLR aircraft.

<sup>1</sup>In co-operation with GFD (Gesellschaft für Flugzielardarstellung) (<http://www.gfd-hohn.de>)

<sup>2</sup>In co-operation with Rotorflug GmbH (<http://www.rotorflug.de>)

<sup>3</sup>GFM: Gomolzig Flugzeug- und Maschinenbau GmbH (<http://www.gomolzig.de>)