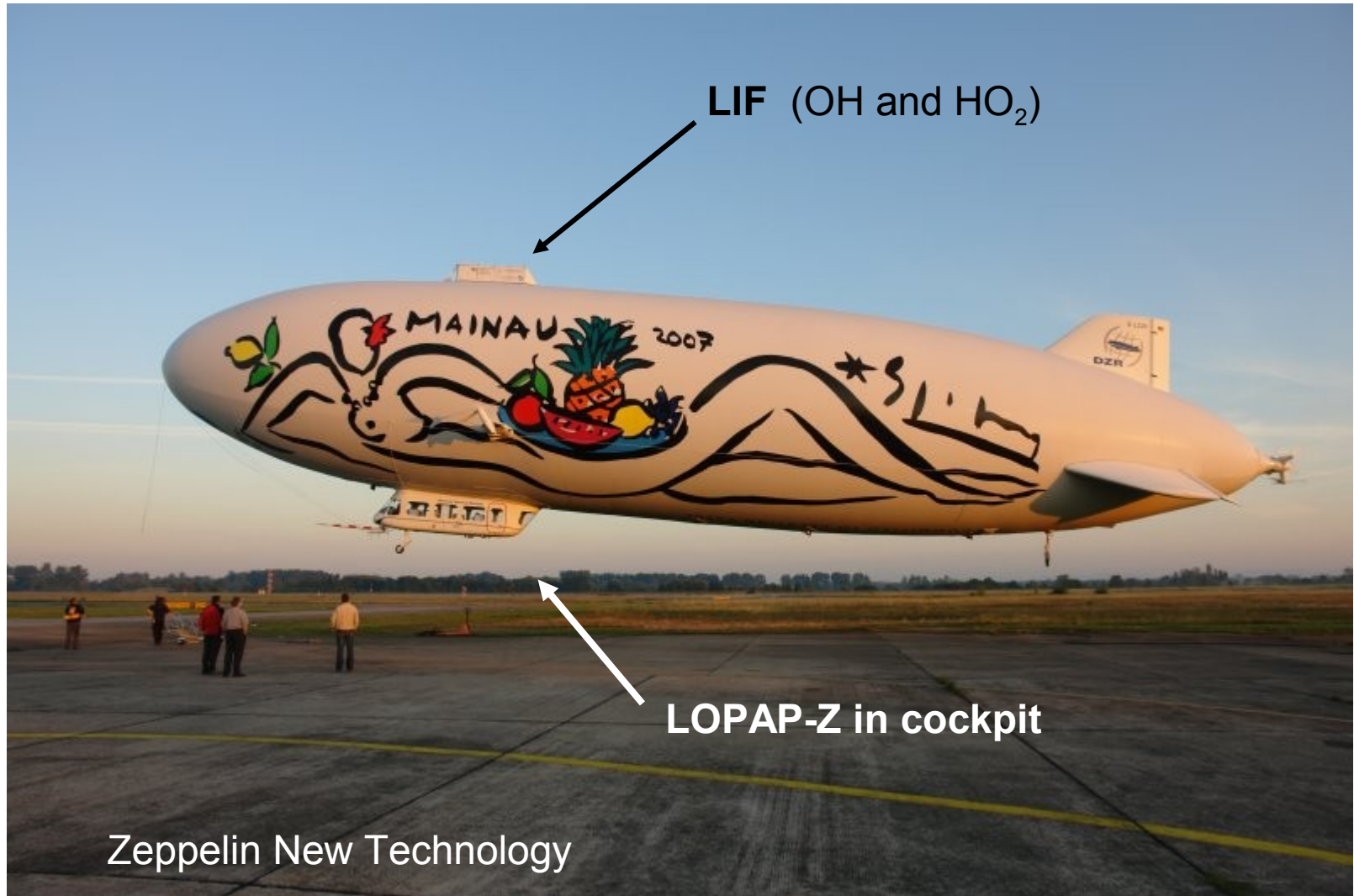


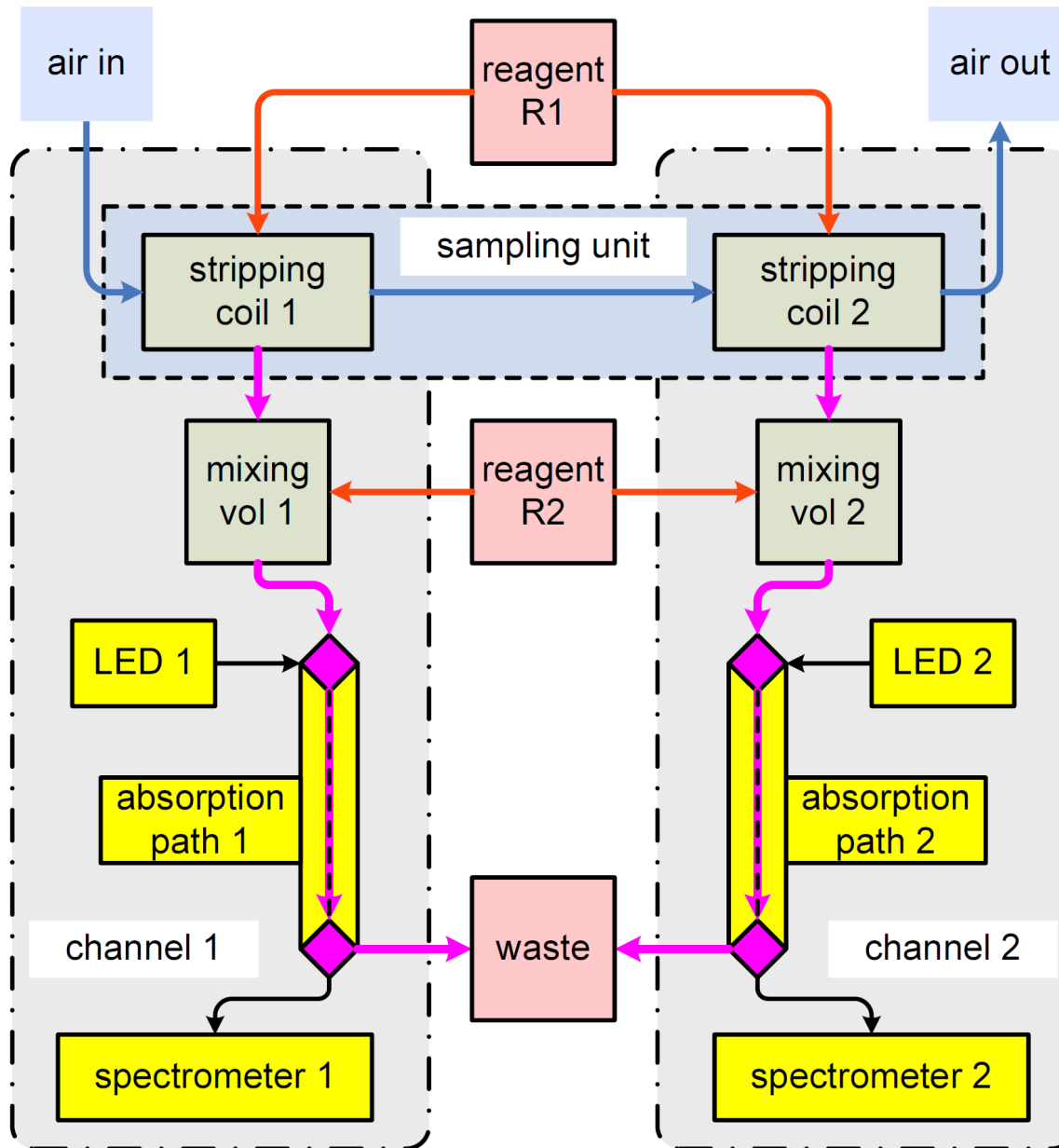
LOPAP - Z

Forschungszentrum Jülich Dep. of Tropospheric Chemistry





Detection principle



LOPAP-Z

Modifications to meet requirements for air-borne operation:

- use of certified materials
- wet-chemistry part housed in a sealed compartment separated from optics and electronics
- low weight
- low power consumption (28 V, max. 800 W)
- certification for air-borne operation

LOPAP-Z

- re-designed thermostated stripping coil
- use of a Peltier air-to-liquid cooler
- zero air injected directly into the inlet of the stripping coil
- no inlet line used for ambient air sampling
- main unit temperature controlled by a Peltier air-to-air cooler
- optimized gas and liquid flows
- emission of white light LEDs is imaged by a lens into absorption path (liquid core Teflon[®] waveguide)
- USB spectrometer from 'Optische Messtechnik, OMT', Germany (type OMT ctf-60) used (14 bit, background corrected spectra)
- preliminary detection limit: about 1 ppt, time resolution: 8 min.
- expected accuracy: <10 %

Sampling coils



Temperature controlled sampling coils

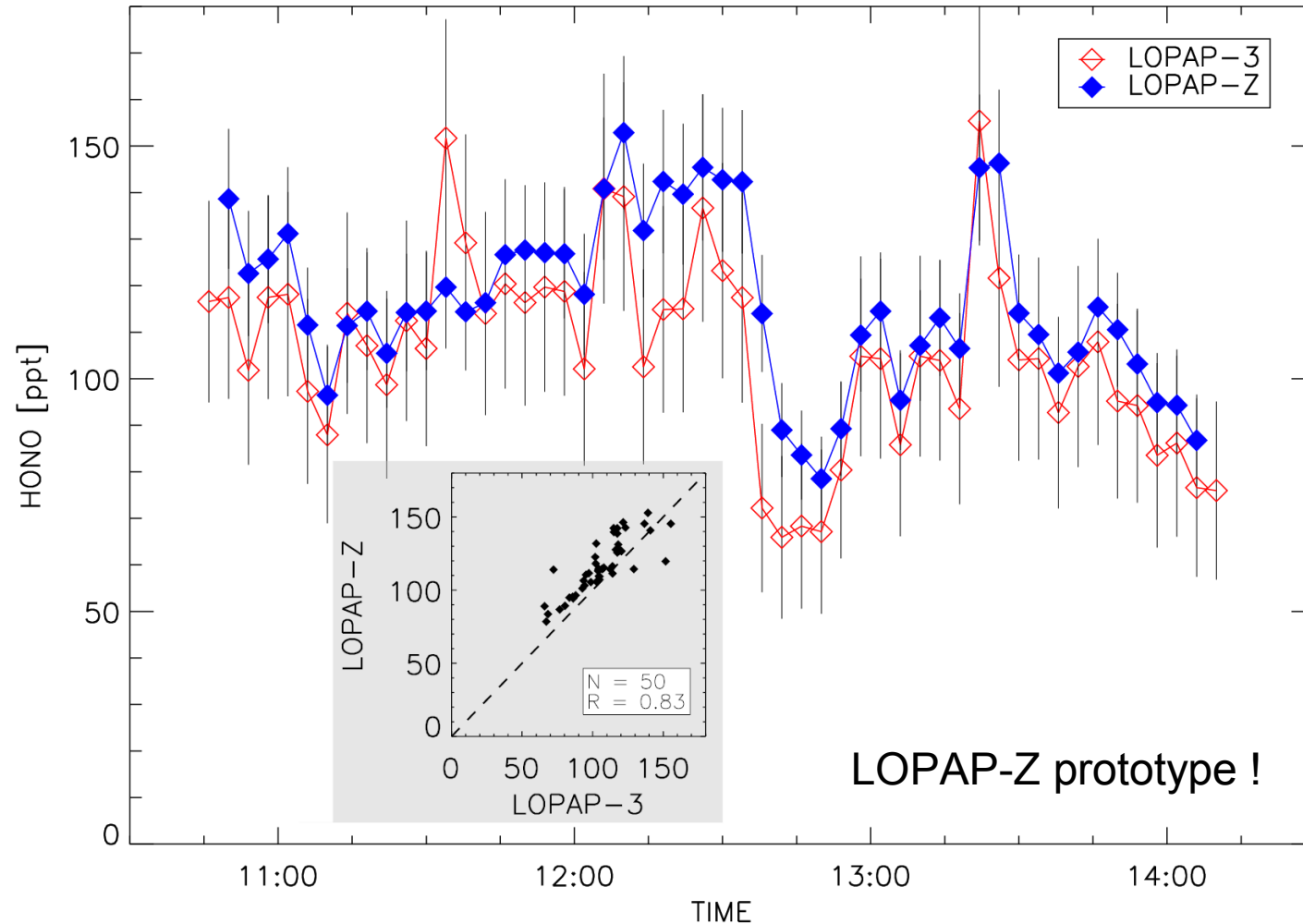


LOPAP- Z sampling unit

intake of sampling coil



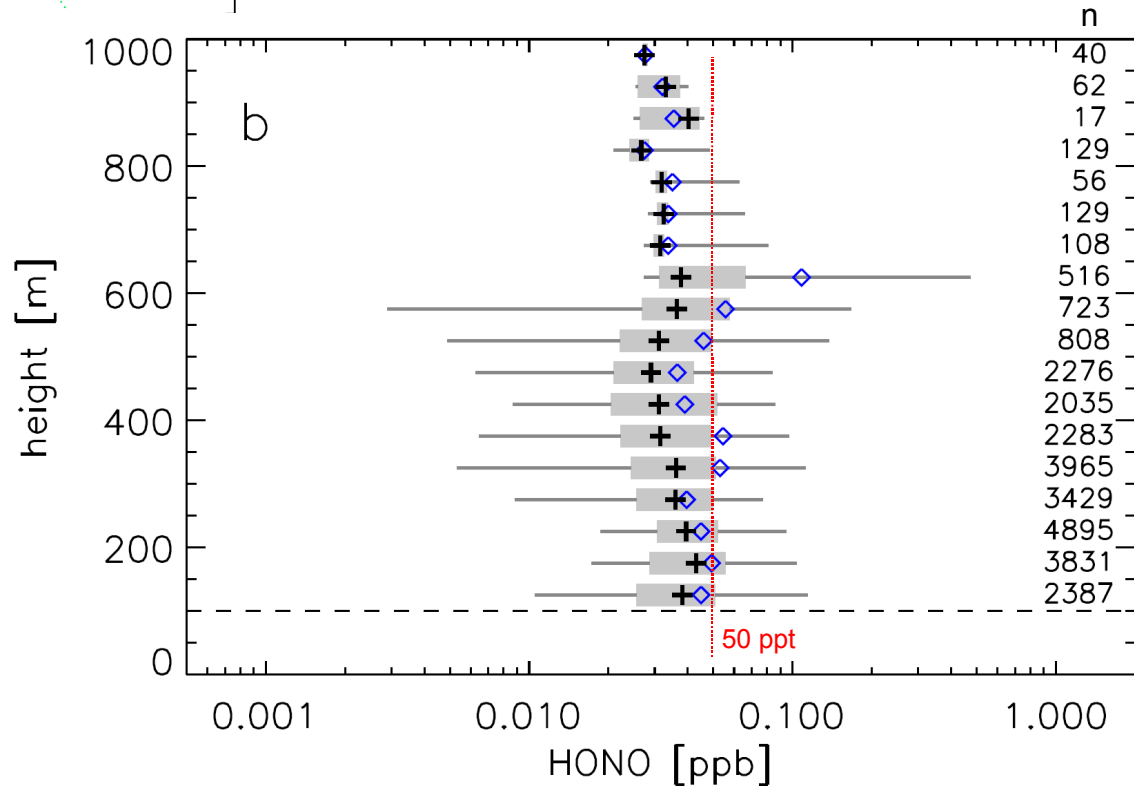
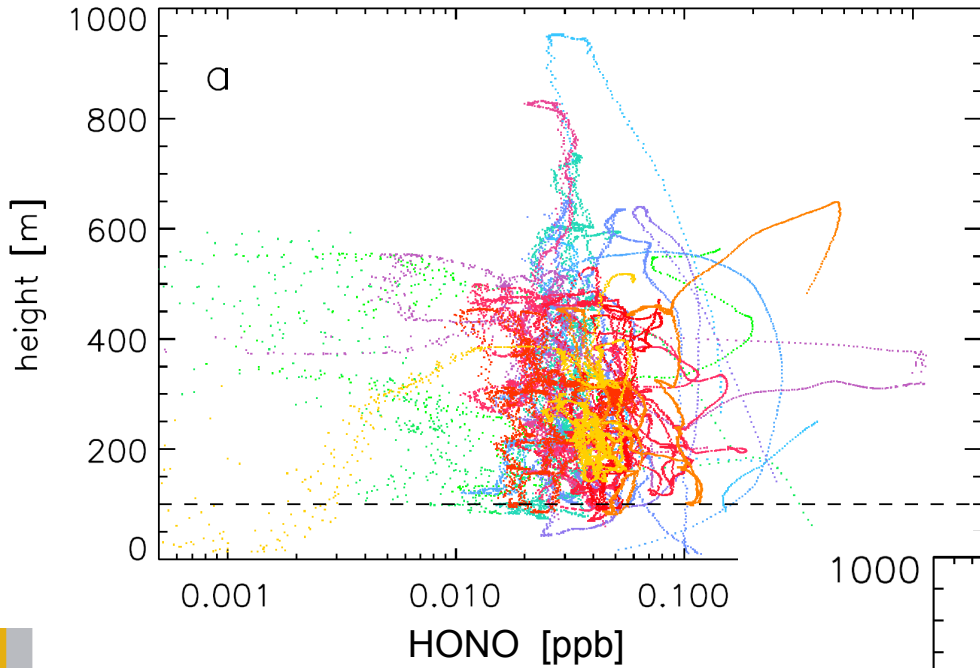
First comparison LOPAP-Z vs LOPAP-3



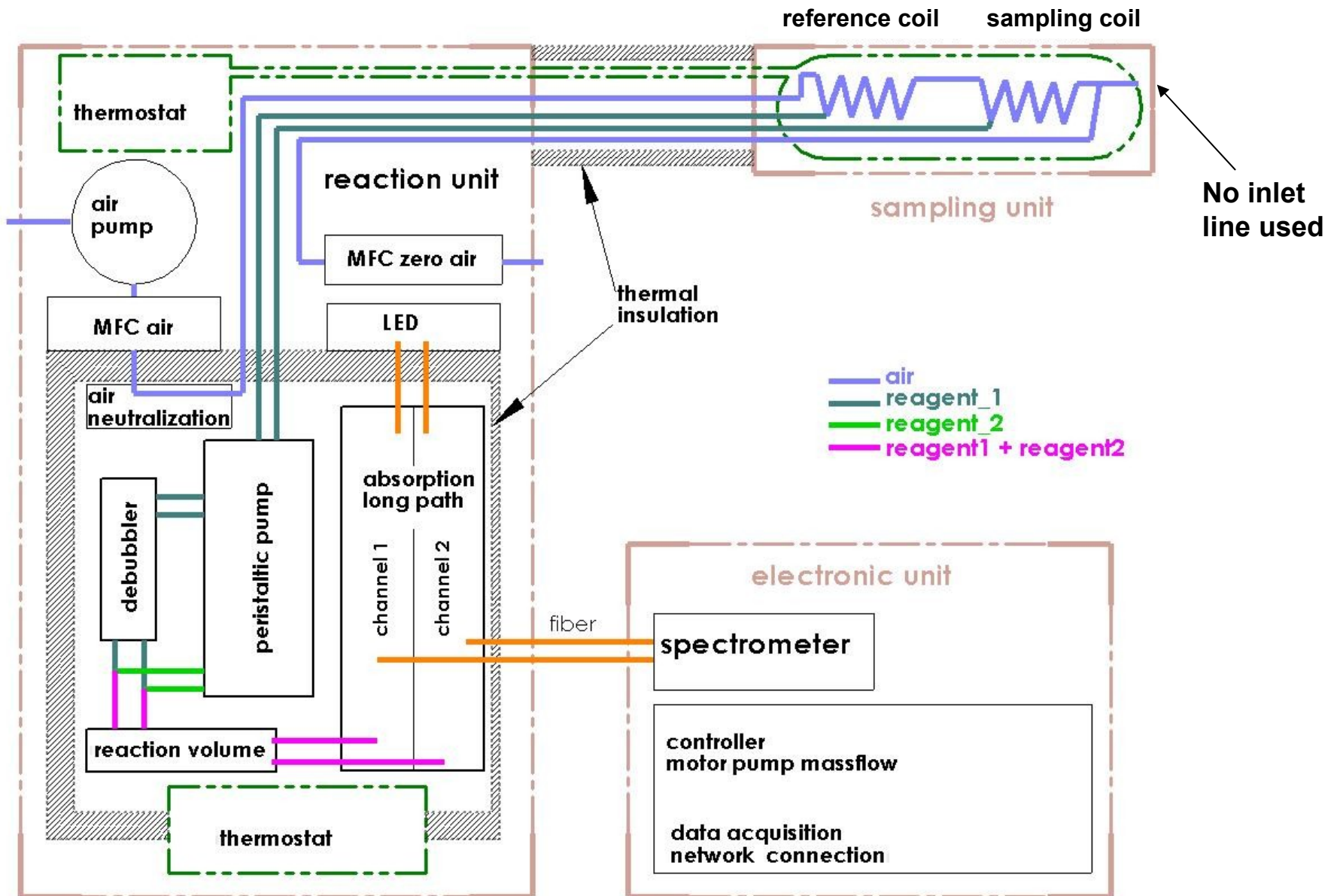
Laboratory intercomparison of a LOPAP-3 vs the LOPAP-Z prototype. Both instruments sampled from a common inlet line.

Flight # 02 03 05 06 07 08 09 10 11 12 13 14 16 17 18

Zeppelin campaign July 2007: flights over Lake Constance



Setup LOPAP-Z



Zeppelin NT airship

- Length 75.0 m, width 19.5 m, height 17.4 m, volume 8450 m³, typical cruising speed 70 km/h, v_{\max} 125 km/h, payload 1900 kg, max. flight altitude 2600 m, max. range 900 km, max. time of flight 24 h.
- A vectored thrust propulsion system (3 engines) allows for accurate steering at low speed.
- Airship is build around a framework of triangular carbon-fibre frames (total weight of structure 1000 kg).
- Body consists of a carrier gas cell filled with helium and two internal air cells (ballonets).