


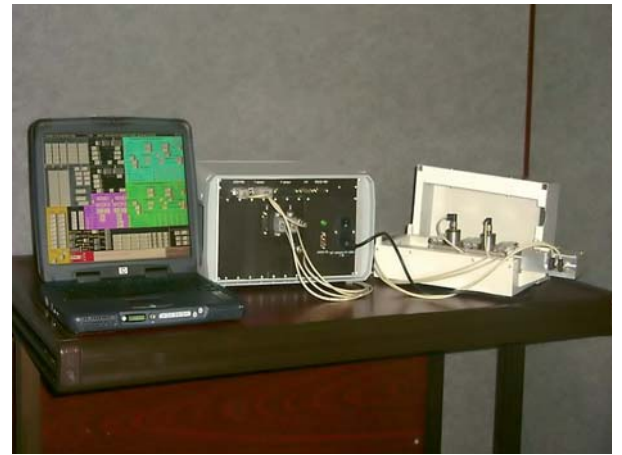


WaSul 

HIGH SENSITIVITY MONITORING SYSTEMS
FOR CONCENTRATION MEASUREMENTS
IN INDUSTRIAL GAS, IN NATURAL GAS,
IN BIOGAS AND IN THE ATMOSPHERE

Technology

HILASE Ltd. is a spin-off company, which was jointly founded by laser spectroscopy specialists of the University of Szeged and the Videoton Holding Plc.



Applied technology:

Laser based photoacoustic spectroscopy

General features of our systems:

High sensitivity, selectivity, automatic operation, fast response time, operation under industrial (even potentially explosive) conditions. It can be integrated into complete control systems.

Communication protocols: 4-20 mA, RS 232/485, Modbus.

Systems are calibrated by the Accredited Calibration Laboratory of the University of Szeged.

Measurable components in the atmosphere, in industrial gases and in natural gas, in biogas

- METHANE
- ETHANE
- HYDROGEN-SULFIDE
- WATER VAPOR
- AMMONIA
- CARBON-DIOXIDE
- AEROSOLS (SOOT, MINERAL DUST, ETC.)
- AND SEVERAL OTHER GAS COMPONENTS



Selected products



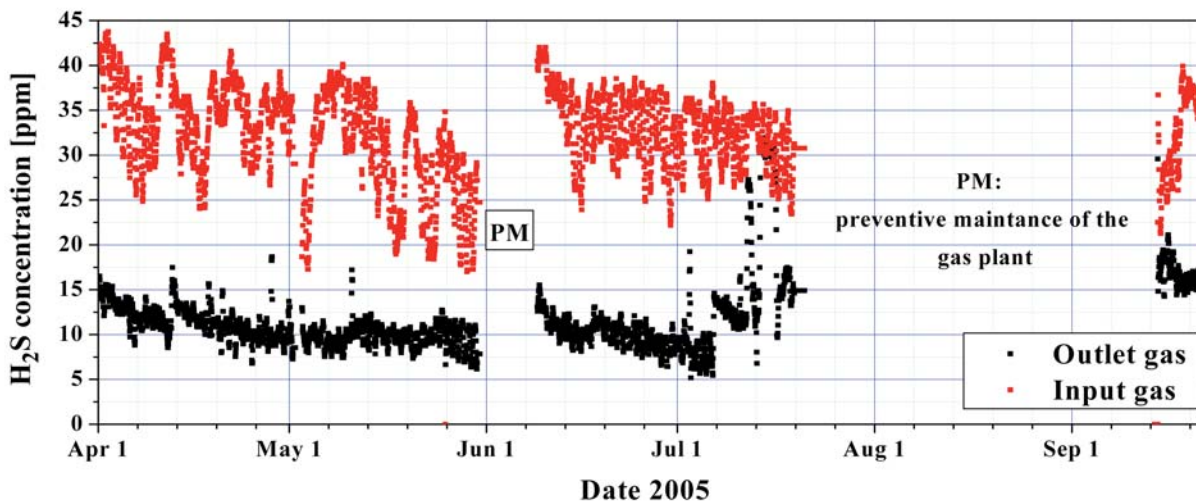
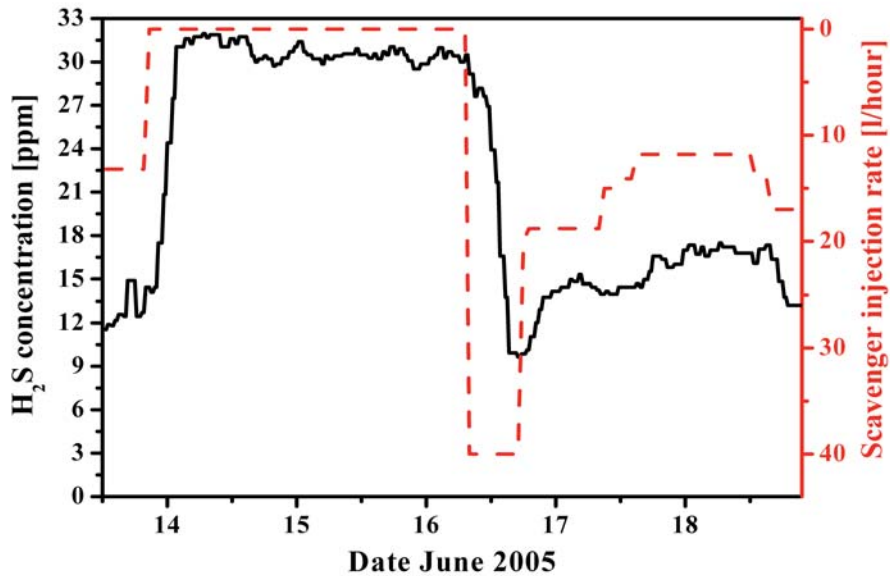
WASUL™-20-EX

(H₂S MEASUREMENT IN NATURAL GAS)

Operated at MOL Rt. Üllés Gas Plant

Certified ex-proof construction.
Reliable operation already for more than 3 years.

Dual channel operation
(before and after de-sulfurization unit).



Selected products

WASUL™-21-EX

(H₂O AND H₂S MEASUREMENT IN NATURAL GAS)

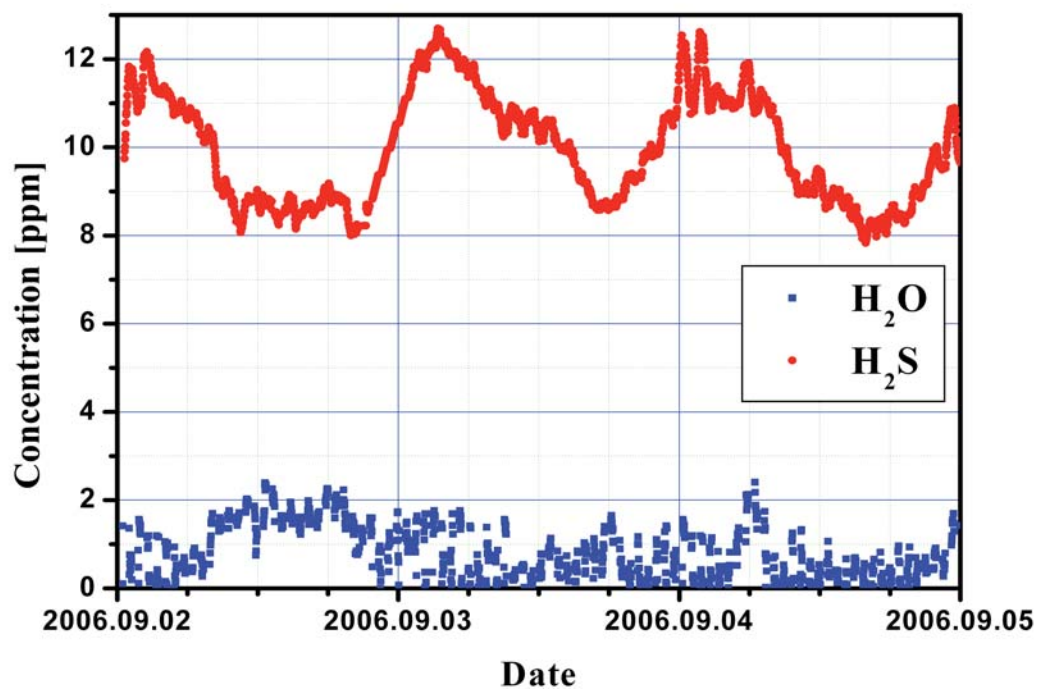
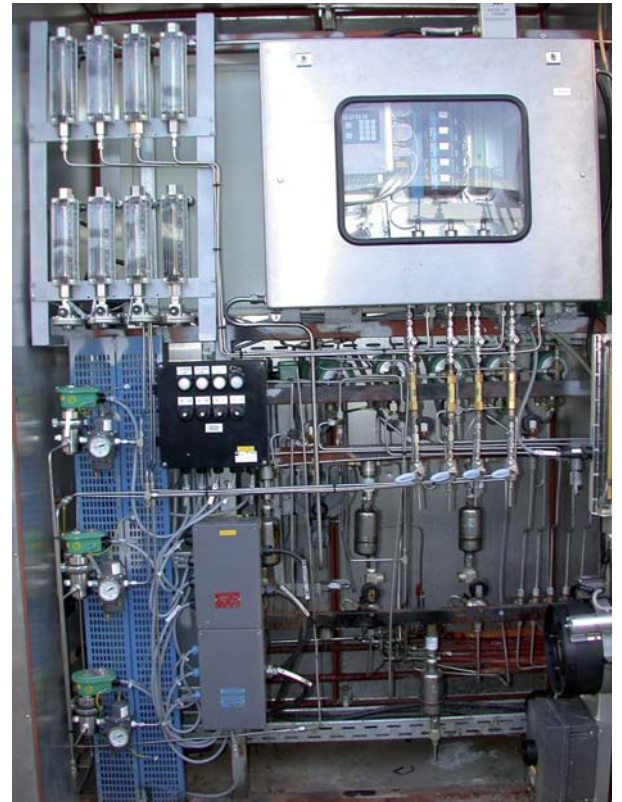
Operated at MOL Rt. Algyó Gas Plant

Sub-ppm level sensitivity.

Wide dynamic range.

Certified ex-proof construction.

Measures in four different natural gas streams simultaneously.

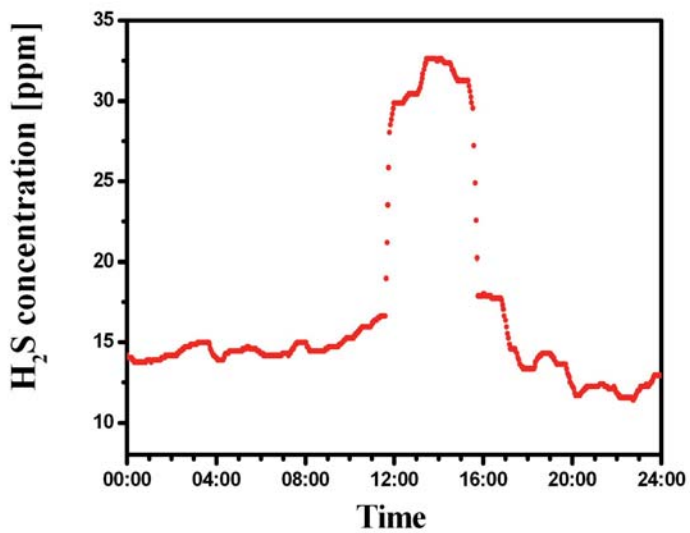
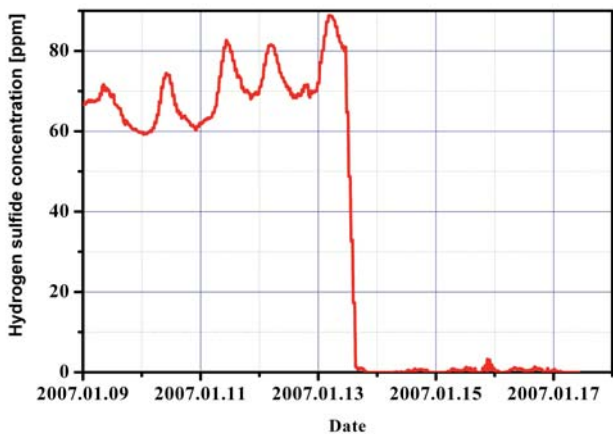


Selected products

WASUL™-21-EX (MOBILE VERSION)

Operated at Mol Rt. at Sávoły Gas Plant
and at Algyó Gas Plant.

Certified ex-proof construction.



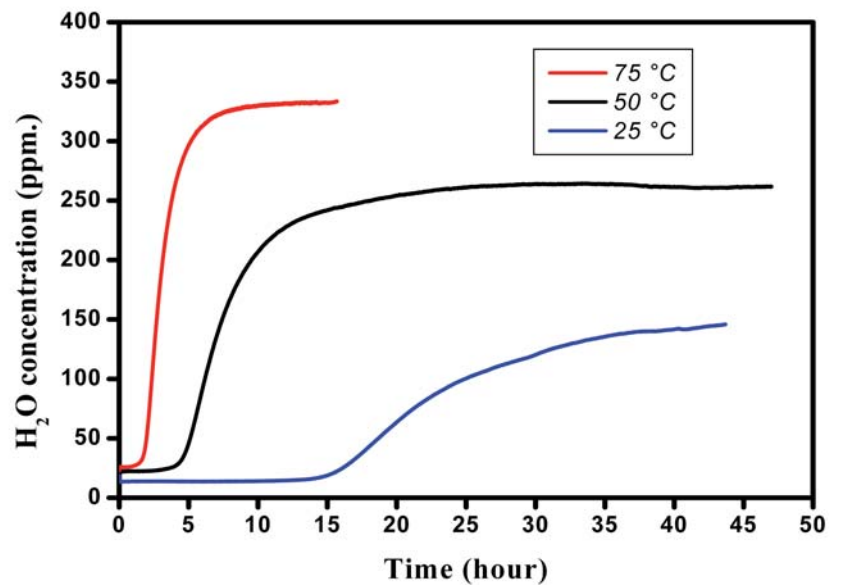
Selected products

MEASUREMENT OF GAS PERMEABILITY OF FOILS POLYMERS

*(INCLUDING MEASUREMENT OF FLEXIBLE OFFSHORE PIPES AT NORMAL AS WELL AS AT HIGH PRESSURES /UP TO 1000 bar/ AND AT TEMPERATURES UP TO 100 °C
MEASURED GASES: H_2O , H_2S , CO_2 , CH_4)*



Reference: Phoenix Rubber Industrial Ltd. Szeged



WASUL™-10

(CONTINUOUS MONITORING OF WATER CONCENTRATION IN NATURAL GAS DRYING GLYCOL)

Under test operation at Mol Rt. Kéleshalom Gas Plant



Selected products

WASUL™-HYGRO

(ATMOSPHERIC WATER VAPOR MEASUREMENT SYSTEM)

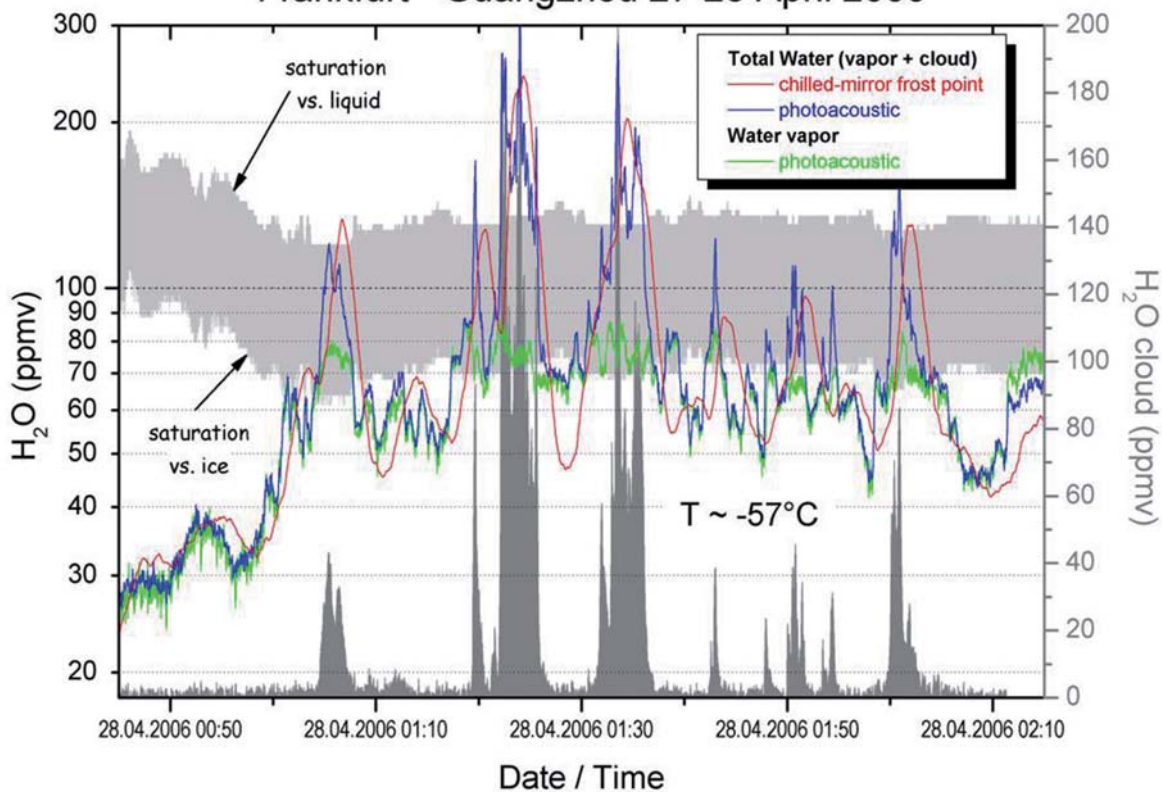
On-board of a passenger aircraft

The number of successful operation during flight campaign already exceeds 30 in 2005-2006. Outperformed conventional chilled mirror hygrometers.



CARIBIC flight LH-146

Frankfurt - Guangzhou 27-28 April 2006



Further references

List of further test measurements, references

WATER VAPOR MEASUREMENT IN CO₂ GAS STREAM

Messer Griesheim Hungary Kft., Ölbő (Hungary)

WATER VAPOR MEASUREMENT IN CLEAN BOXES

General Electrics Hungary Rt., Budapest (Hungary)

WATER VAPOR MEASUREMENTS IN ATMOSPHERIC SIMULATION EXPERIMENTS

Forschungszentrum Karlsruhe (Germany)

COMBINED METHANE, ETHANE AND CARBON-DIOXIDE MEASUREMENTS ON A BIOGAS PLANT

Exim-Invest Kft. Nyíregyháza-Oros (Hungary)

MUWAPAS: MULTI-WAVELENGTH AEROSOL MEASURING SYSTEM

(The system can analyze quantitatively and qualitatively atmospheric aerosol.)

Laboratory tests in Leipzig (Germany)

Field tests in Roveredo (Switzerland)

MONITORING BTEX CONCENTRATION IN DRINKING WATER

Laboratory tests (Szeged, Hungary)

PERMEABILITY MEASUREMENTS ON VARIOUS POLYMER SAMPLES

Laboratory system (Szeged, Hungary)



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