



A company of



# Optical gas sensing for leak detection

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# Wilco AG

- Headquarter and manufacturing in Wohlen-CH since 1971
- Since 2013, Wilco AG belongs to Bausch + Ströbel
- 110 employees with world-wide more than 4'500 systems in operation
- Wide experience in manufacturing quality assurance equipment
- Inventor and holder of patented technologies
- Technical solutions provided into all industries
- Close relationship between customer and our scientists guarantees the development of new testing technologies



# Pharma Industry





# Food Industry



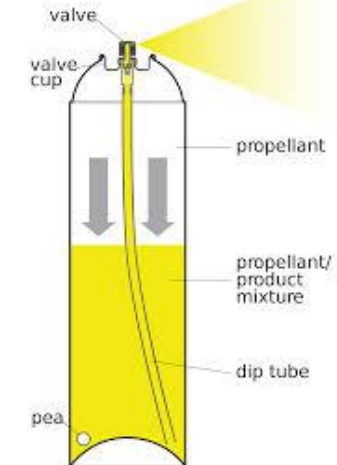


# Can Industry





# Aerosol Can





# UN Regulations



- ADR 2007

European Agreement concerning the International Carriage of Dangerous Goods by Road



# Aersol Production Process «traditional»

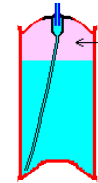
Waterbath  
Process



Production



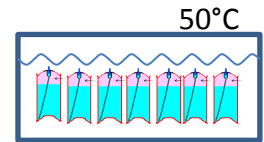
Transport



Filling



Checkkweigh



Waterbath





# Water-bath Testing

Troubles with the traditional method

- Heat 50°C
- Energy consumption
- Poor leak testing capabilities
- Water waste
- Down time after leaking
- Production space



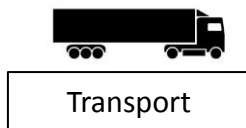


# Aersol Production Process «The Alternative»

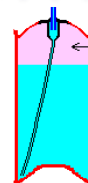
Waterbath  
Process



Production



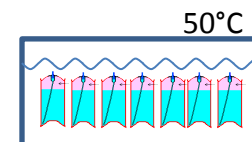
Transport



Filling



Checkkweigh



Waterbath

Alternative

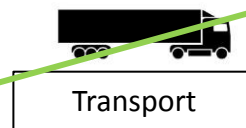


Production



Burst and Leak  
Test 5 $\mu$ m

QMS



Transport



Filling



Checkkweigh



Leak Test 2 $\mu$ m  
Valve an Crimp

QMS



# Empty Can Testing

- Place can in test chamber
- Apply pressure
  - 12 bar rated can
    - > 8 bar test pressure
  - 15 bar rated can
    - > 10 bar test pressure
- Hold pressure
- Check for a pressure increase in the test chamber





# Pressure Decay Method





# Leak sizes for the WB alternative

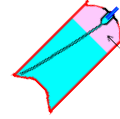
Can

Leak Size  
Leakrate



5 µm

$3.3 \cdot 10^{-2}$  mbar\*l/s



2 µm

$3 \cdot 10^{-3}$  mbar\*l/s

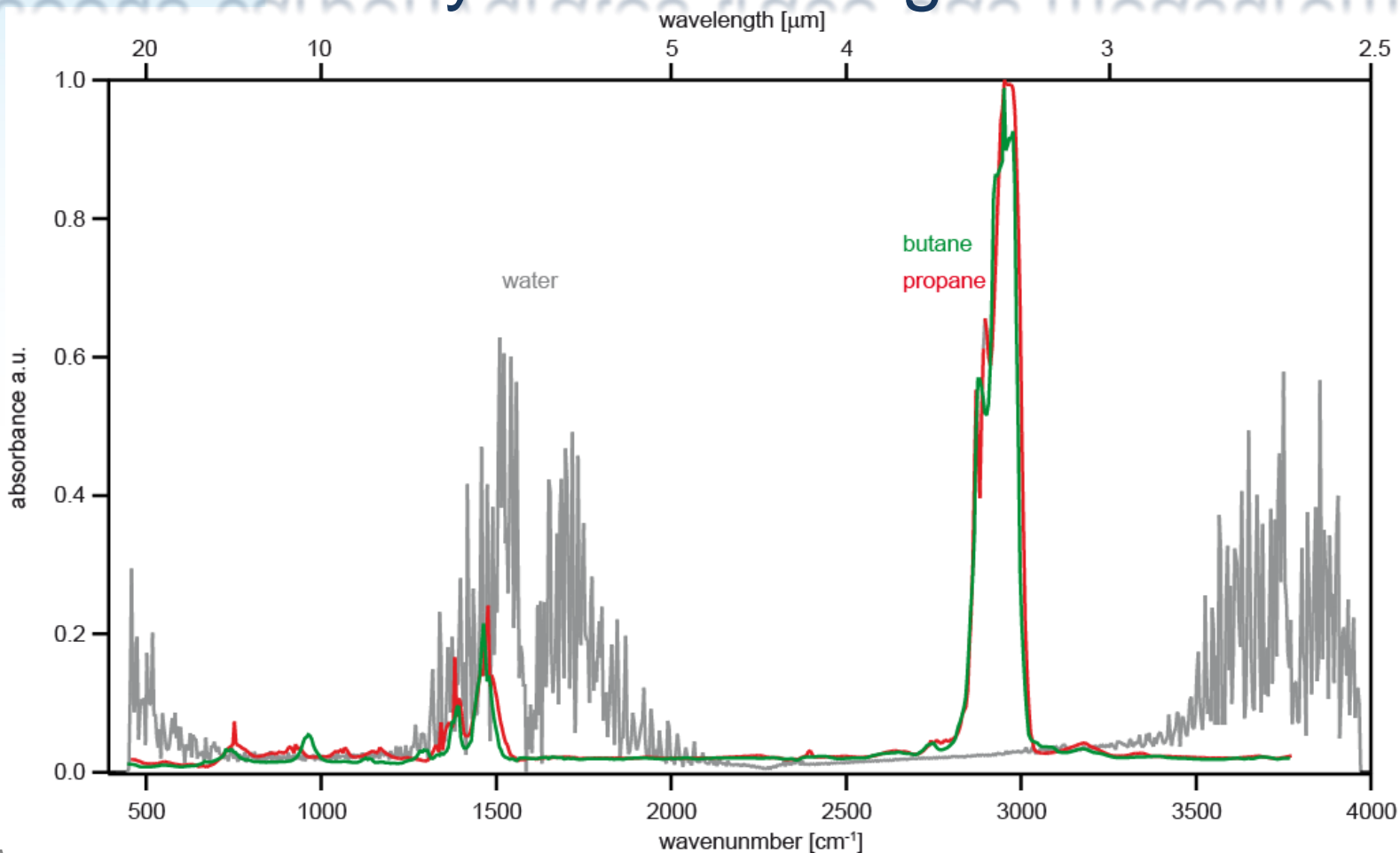
Bubbels



\* Process not in place by regulation



# Direct spectral absorption of gaseous carbohydrates trace gas measurements





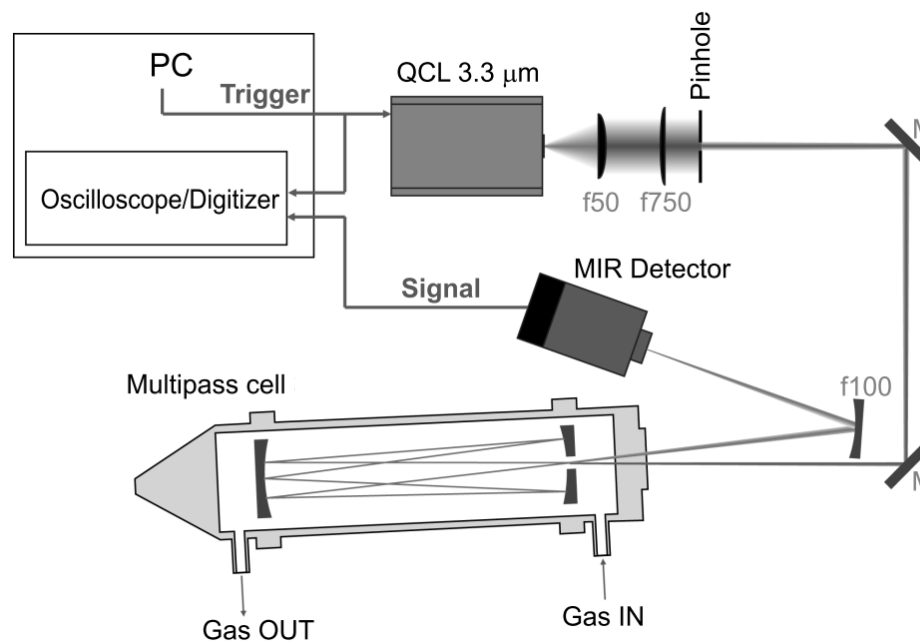
## WILCOMAT™ AE/GD1

- Detection of propellant (propane and/or butane) gas leaky from the MDI's or consumer goods filled Aerosol cans.
- The Technology used is the Laser absorption spectroscopy at a wavelength of 3,3  $\mu\text{m}$
- The WILCOMAT™ is capable to test up to 900 filled and sealed AE cans with the use of only one newly developed Infrared laser based system.
- Leak rate detection less than 0.1 cc/min, which is significantly better than the requested  $2.0 \times 10^{-3}$  mbar x l/sec (European Aerosol Federation Guideline)



# Spectroscopic Setup

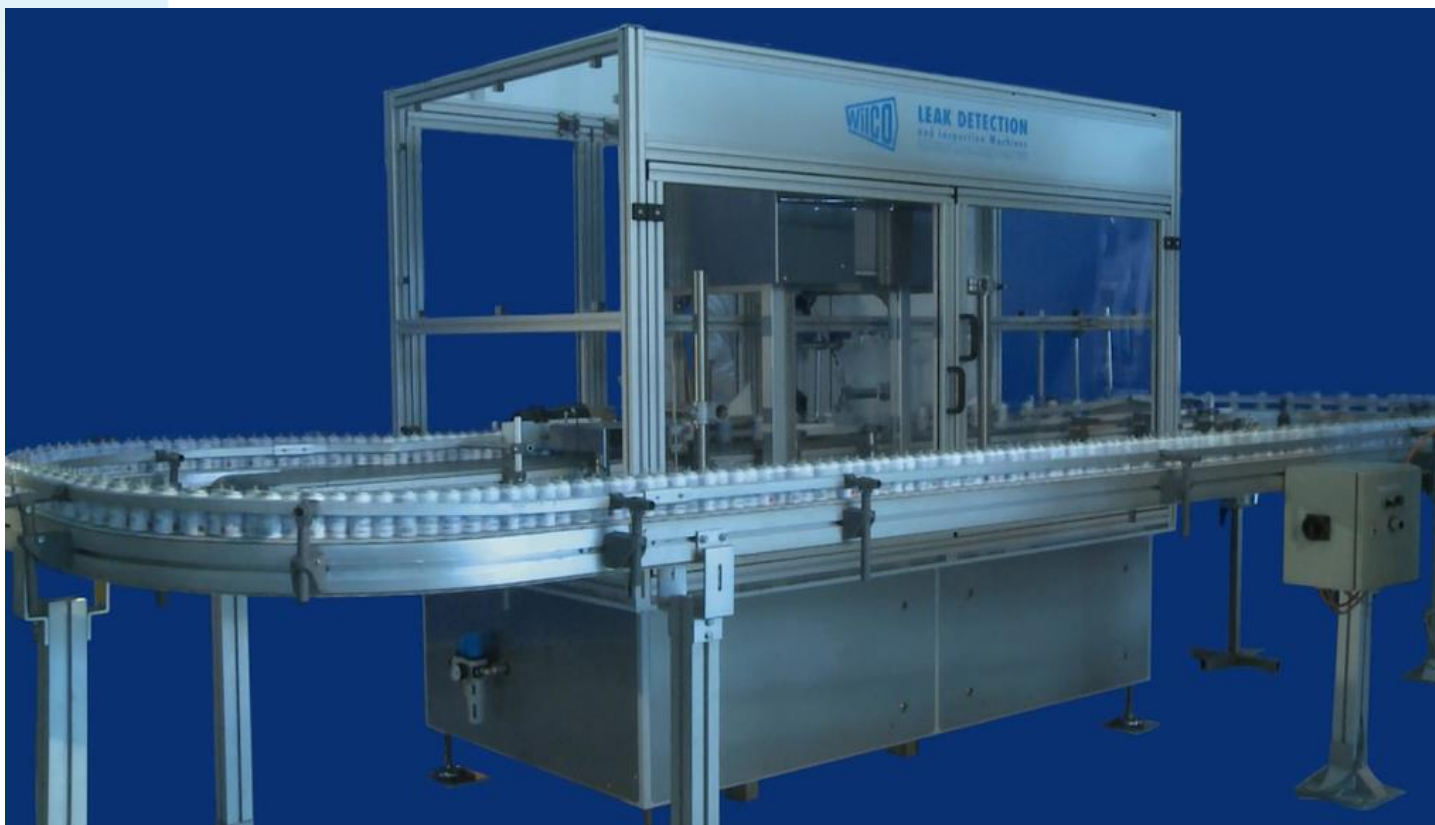
Fabry – Perot quantum cascade laser







# WILCOMAT AE/GD1 500 cpm





# WILCOMAT AE/GD1 250 cpm





# OIT Screen

Reject limit





# Summary

- Optical Gas Sensing offers several advantages
  - fast
  - sensitive
  - lower machine cost
  - less ATEX implications
  - environmental protection

