MCERTS 2007

Advances in Emissions Monitoring using Gasmet FTIR Technology

Presentation by Quantitech Ltd

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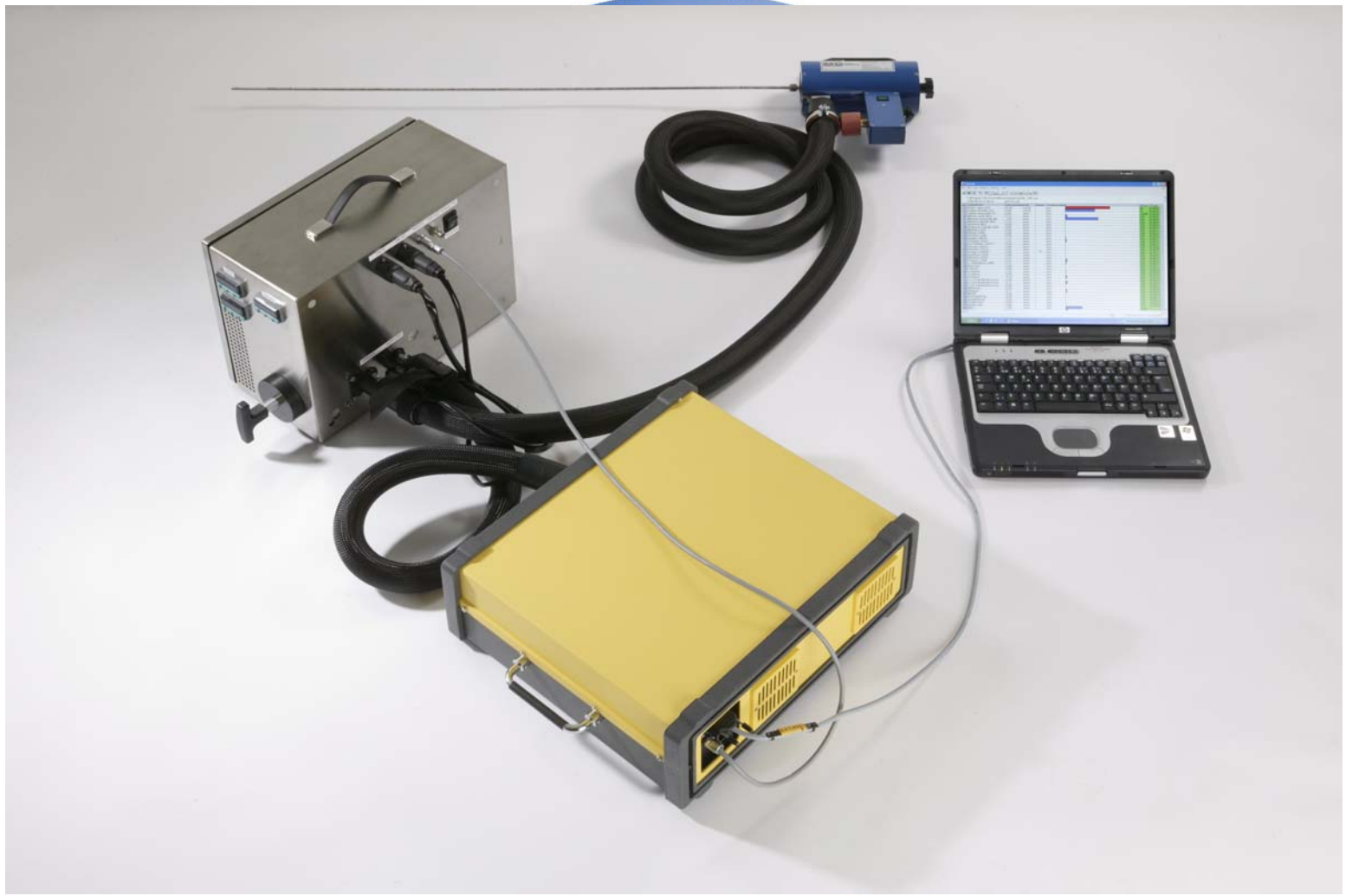
Quick Recap

- **Fourier Transform Infra Red**
- **true multicomponent analysis**
- **simultaneous quantification of 50 or more different gas components**
- **wide measurement ranges**
- **low detection limits - typically less than 1 mg/Nm³**

Features of FTIR

- automated cross interference corrections
- Reproducible and accurate results (MCERTS and TuV certified)
- Designed for the industrial environment
- sample gas temperature 40°C - 200°C
- Standard Reference Method

Transportable CEMS



Gasmet CEMS

- Cx-4000
- Sample System
- Industrial PC
- Heated Sample Lines
- Heated Probe
- Additional Sensors

Typical FTIR AMS

- CO_2, CO, SO_2, NO, NO_2
- H_2O
- HCl, HF
- NH_3, N_2O, CH_4
- Ethane, Ethylene, Formaldehyde
- Hexane, Propane, Pentane, Methanol
- Other VOCs, HCN, SF_6

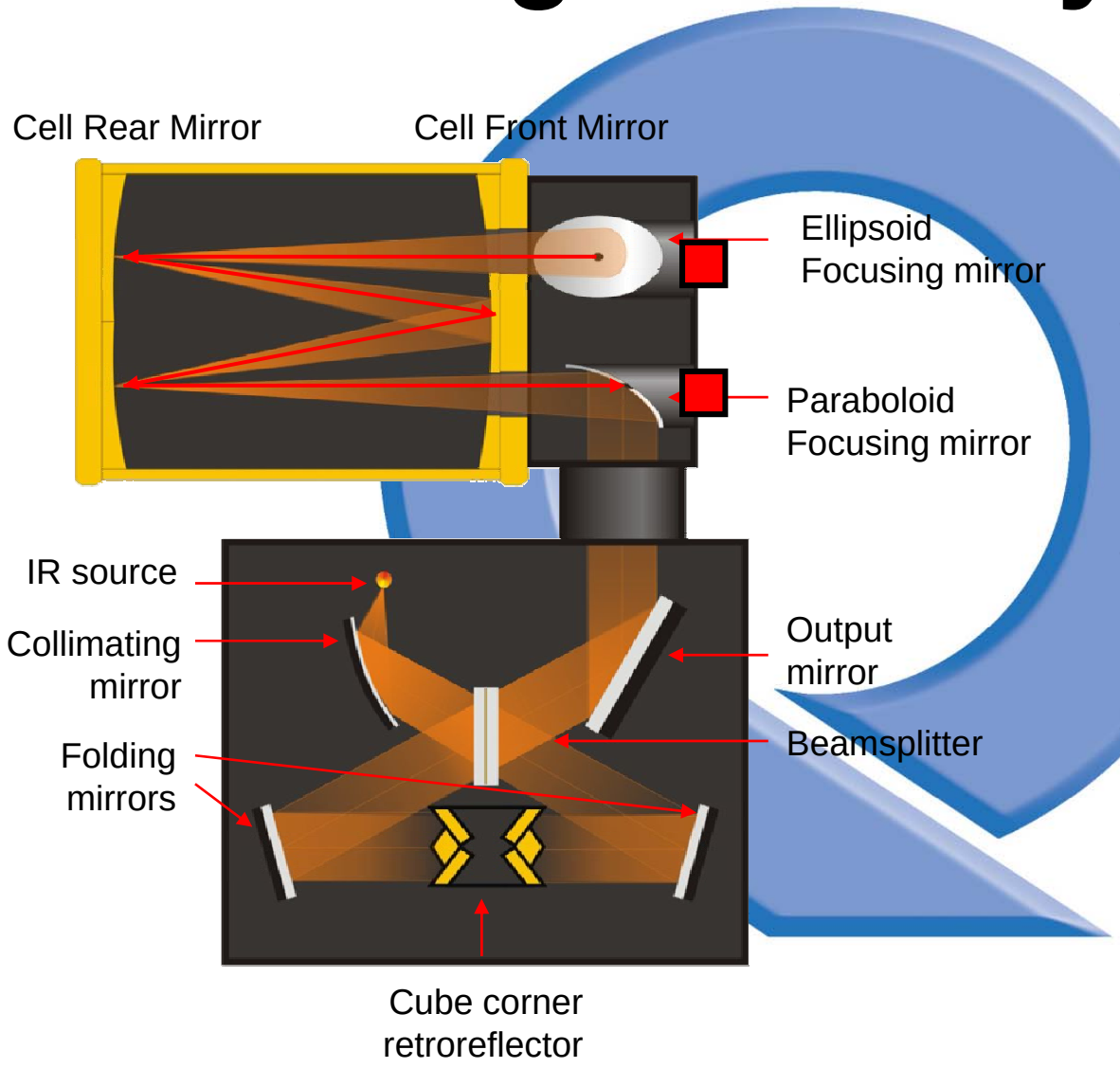
Advantages of FTIR

- **Single analyser**
- **Real time HCl, HF and NH_3**
- **Speciated VOCs**
- **Typically one minute averages**
- **All parameters logged over the same interval**
- **Unattended operation**

More Advantages

- One sample line and probe
- Automatic zero and span checks
- Analysis of additional measurands
- Data from external sensors also recorded
- Warning of unidentified interferences
- 60 minutes setup and warm-up time
- Integrated Oxygen sensor

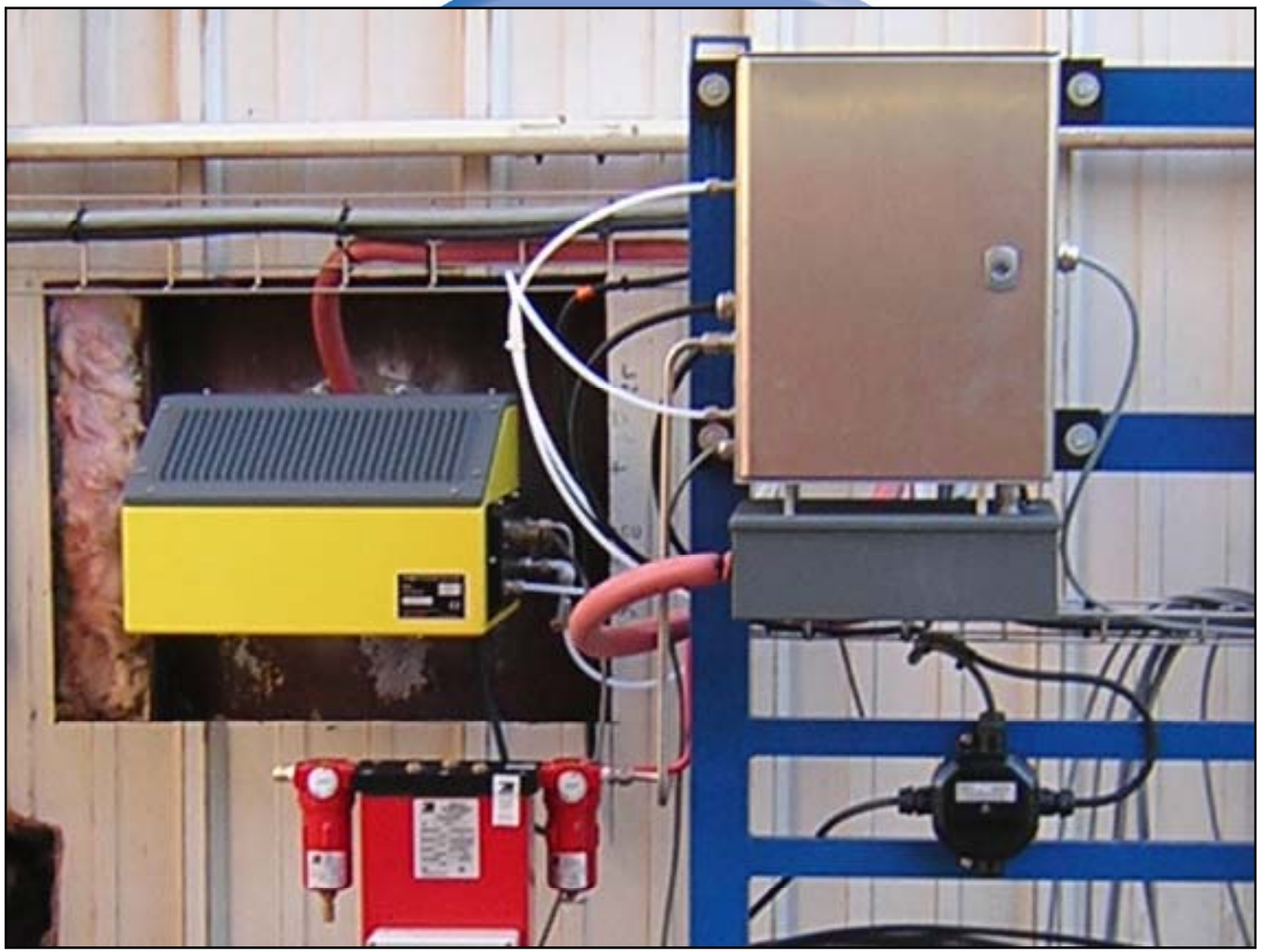
Integrated Oxygen



- **VCSEL laser is located coaxial with Ellipsoid mirror**
- **Laser detector is located coaxial with Paraboloid mirror**
- **Entire assembly in the focusing unit of FTIR**
- **Laser and IR beams share the same optical path length inside the cell**

In-situ FTIR

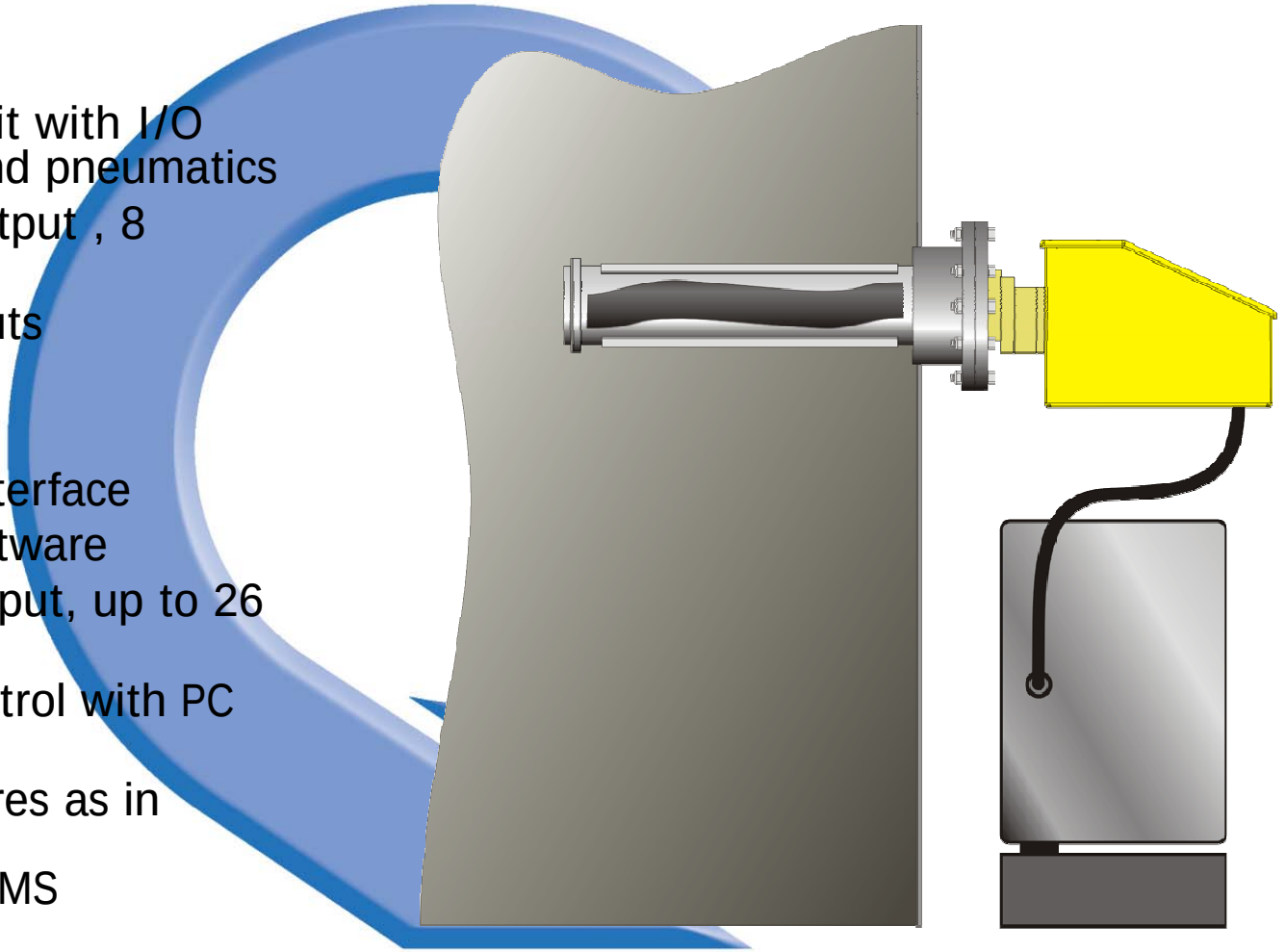
Analyser and Auxiliary Unit



Basic Structure

- **Basic version**
  - Auxiliary unit with I/O functions and pneumatics
  - 4-20 mA output , 8 channels
  - Alarm outputs

  Options
  - Windows interface
  - Calcmet software
  - ModBus output, up to 26 channels
  - Remote control with PC Anywhere
  - Same features as in extractive GASMET CEMS



When is In-situ preferred?

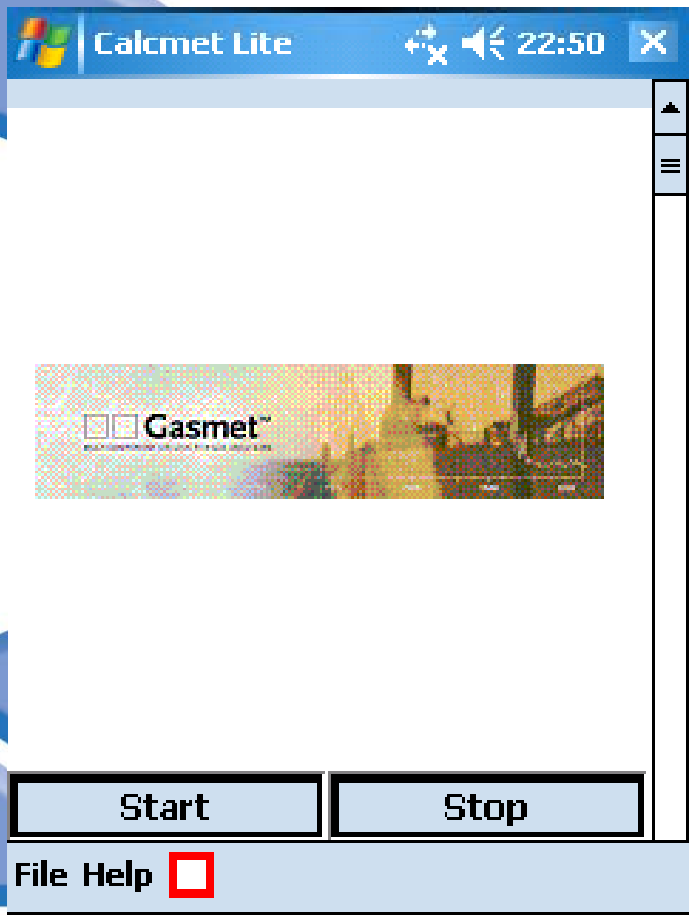
- ***In Situ* FTIR is**
- More powerful analytical method than existing *in Situ* analysers such as Gas Filter correlation IR, DOAS, etc.
- Low cost alternative for extractive FTIR

- ***In Situ* FTIR is an effective tool in any of the following cases:**
- Measurement of several gases is required
- Gases include H_2O, HCl, HF, NH_3, VOC's, or other gases not covered by existing *in situ* analysers
- The sample matrix is difficult to analyse with traditional methods (high and variable water content, strong spectral overlap)

Gasmet DX-4030

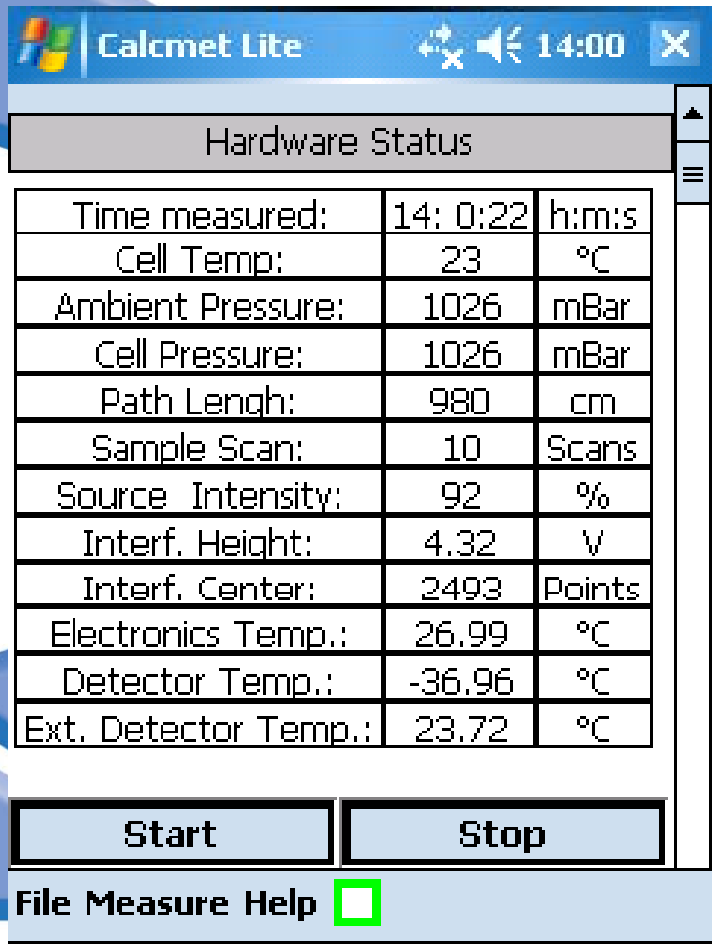
Calcmet Lite

- Runs on PDA (Windows Mobile)
- Indicator lights to display the status
- Analyzer power control on/off – no mechanical switch
- Very easy to use, no previous experience with analytical instruments required
- In concept similar to Calcmet, with ini. file for parameters, spe. File for spectra etc.



Calcmet Lite

- **Hardware status can be checked just like on regular Calcmet**
- **Zero calibration stable for many days**
- **Application stored in the analyser - PDA used for displaying and storing the results**



Do you have a potential application?

- When the answer is ‘YES’ then:

- Contact Quantitech - Stands 26 & 27
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- www.quantitech.co.uk
- www.gasmet.fi
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