



GAS CAMERA

Mobile imaging system to detect methane plumes from distances between 0 m and at least 100 m

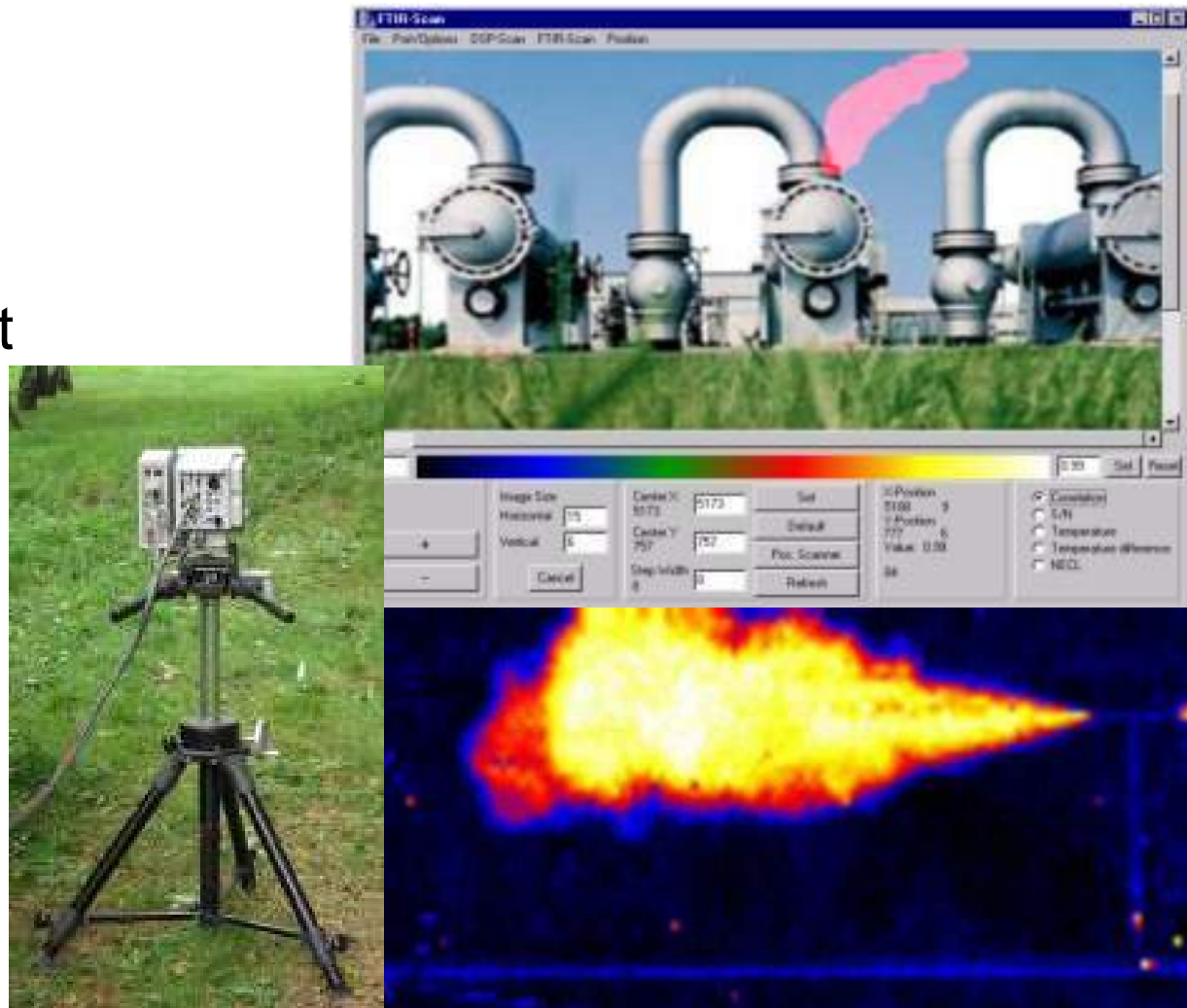
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Overview

- Project Goal
 - Development
 - Status
1. Next Steps



1. Project Goals

Vision:

Mobile imaging system to detect methane plumes from distances between 0 m and at least 100 m

Main Demands:

- Removable
- Low energy consumption
- High measure responsivity
- Real time visualisation
- Easy handling
- All-purpose

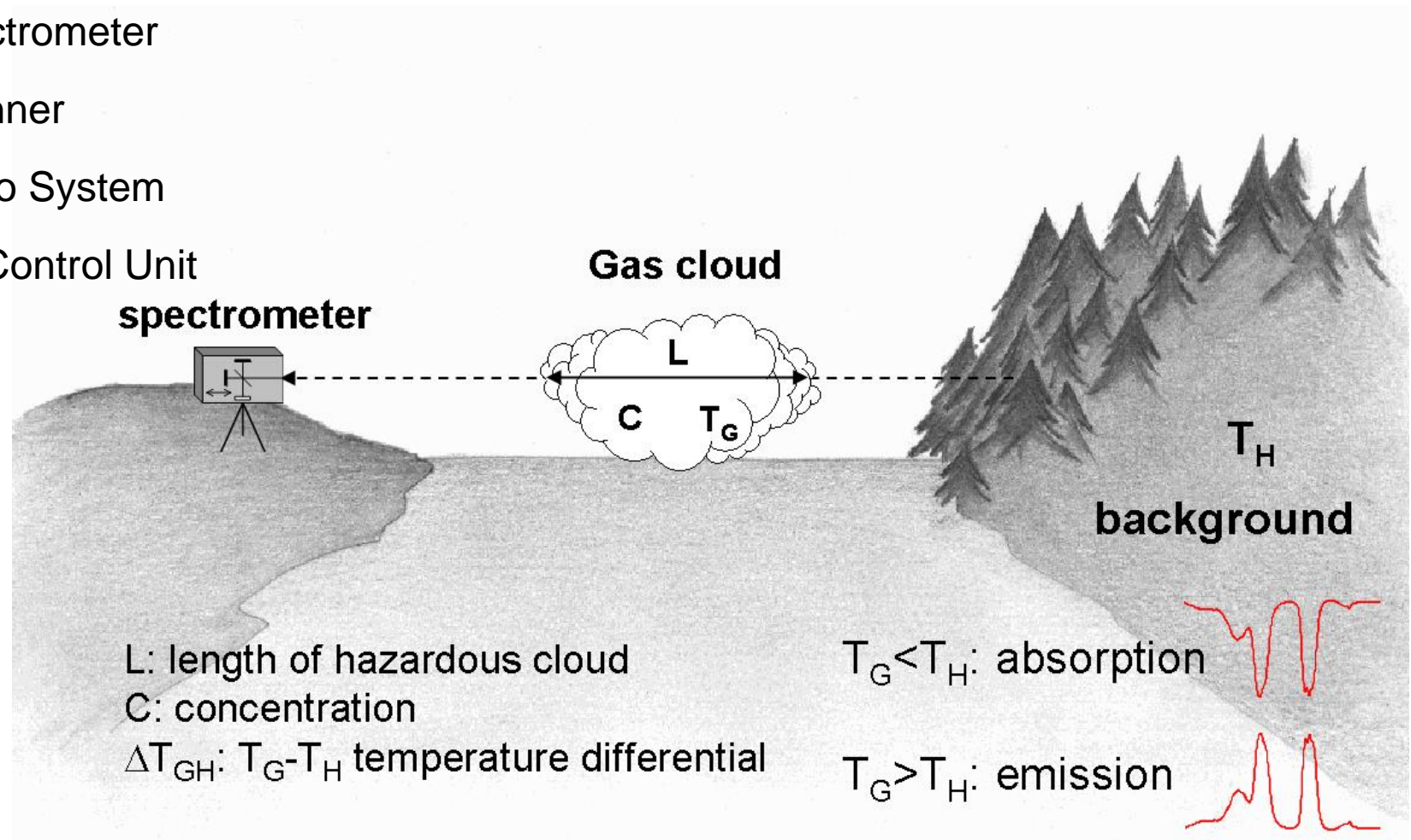


1. Project Goal: „Gas Camera“ Specification

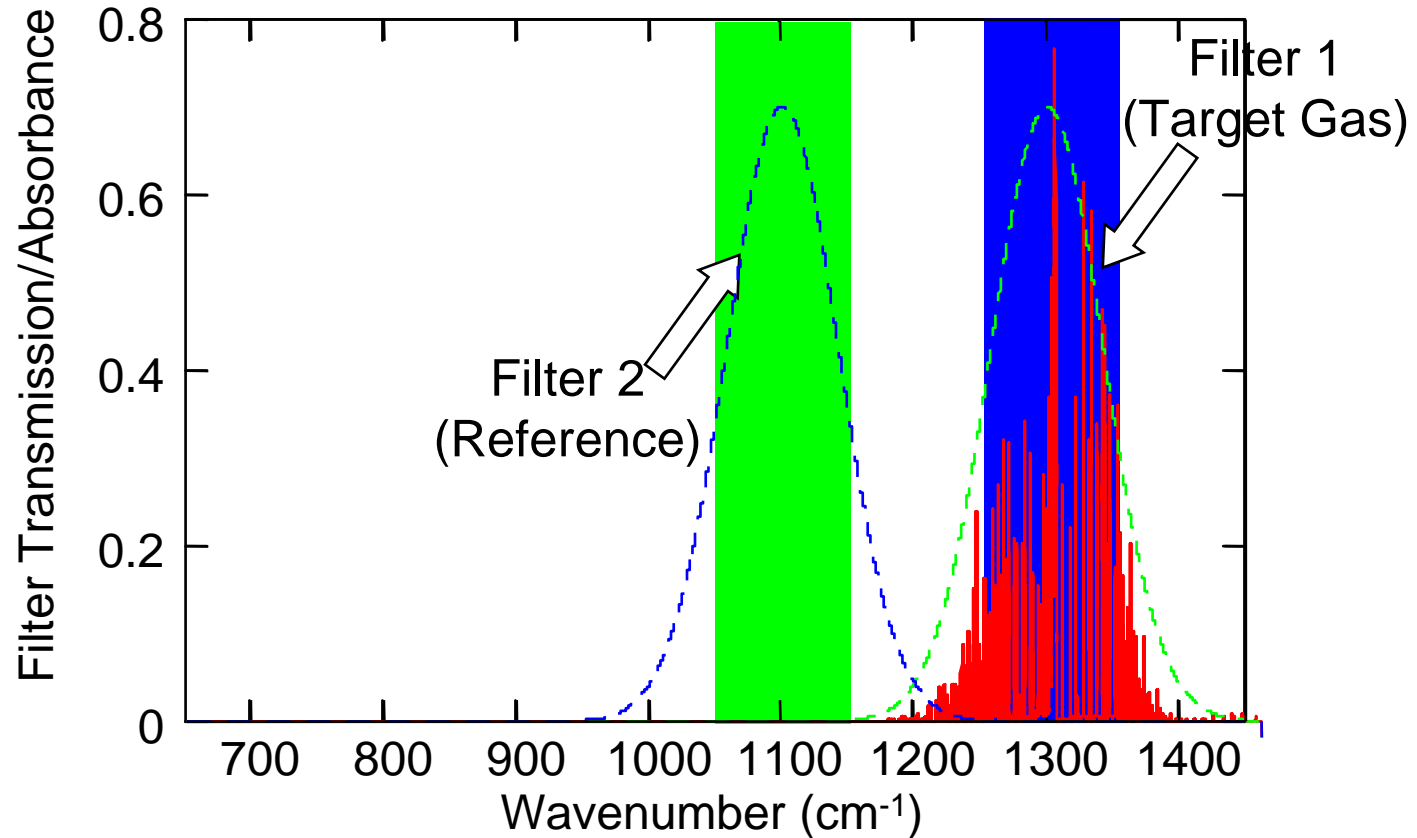
Specification	Overall Requirements
Target gas	Methane CH ₄
Max. weight	25 kg
Detection range	100 ppm m
Leakage rate	< 100 L/h (25 L/h under ideal conditions)
Locality	Pipelines and stations, open and closed; explosion proof
Visualisation	Overlay of results with real video image
Spatial resolution	min. 128 x 128 pixel
Service staff	Work men with special training
Weather condition	All weather conditions ; -20°C up to 40°C
Field of regard	100 m x 20 m
Frame rate	> 1/s
Energy	Battery; min. 4 hours autonomic; < 100 W (including computer)
Max. dimensions	0,5 m x 0,3 m x 0,25 m

2. Development Basis : IR-Spektroskopie

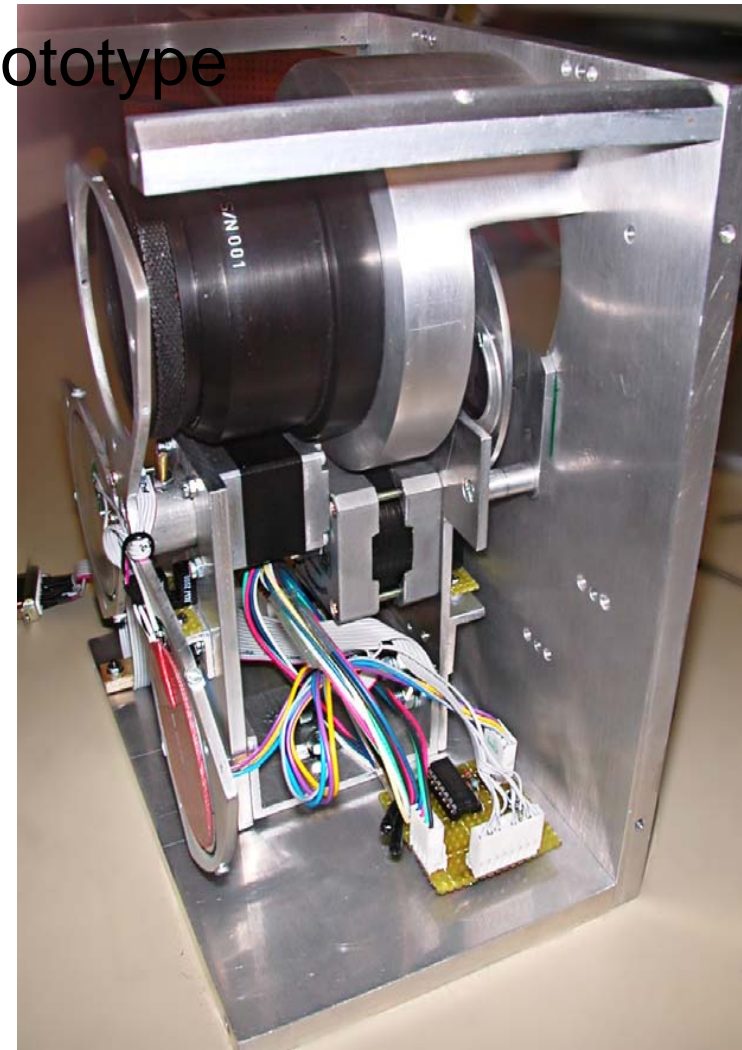
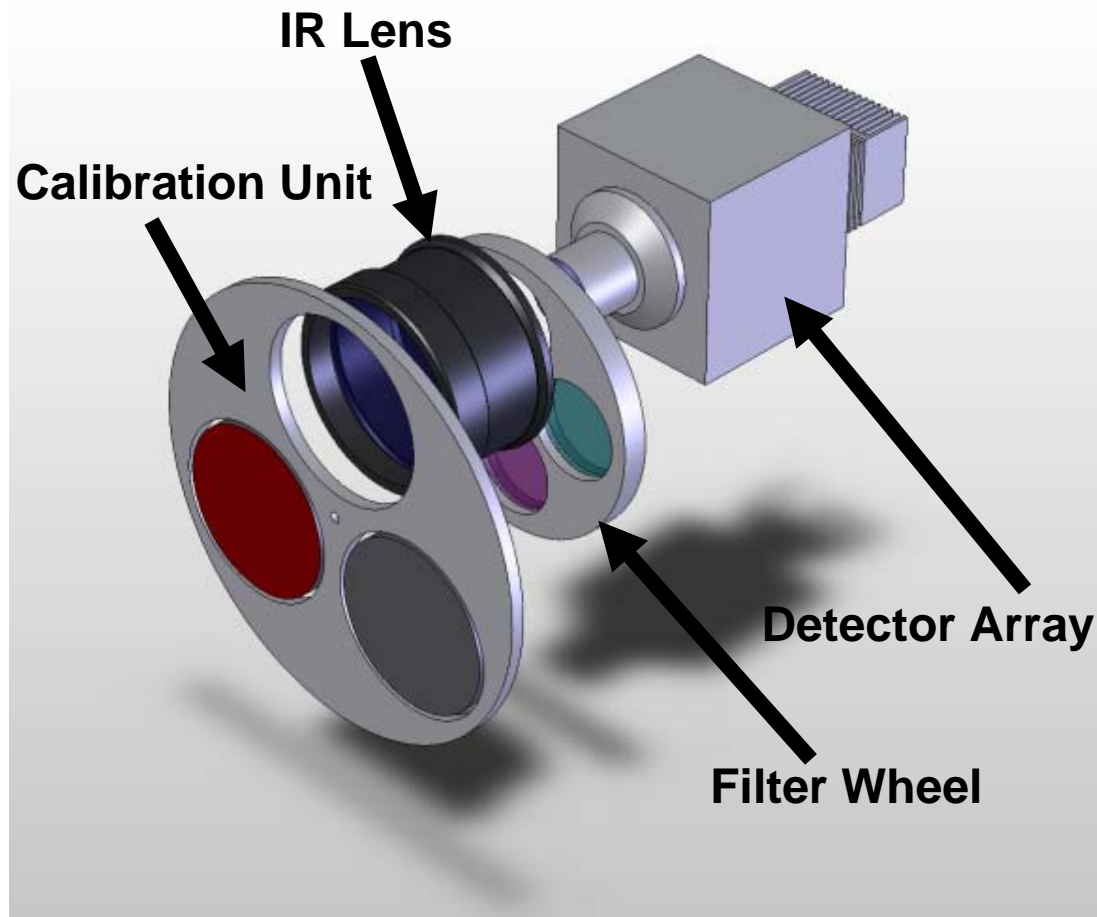
- Spectrometer
- Scanner
- Video System
- PC Control Unit



2. Development Basis: Interference Filter Principle



2. Development: Principe and Prototype



3. Hardware-Status

Video
Camera

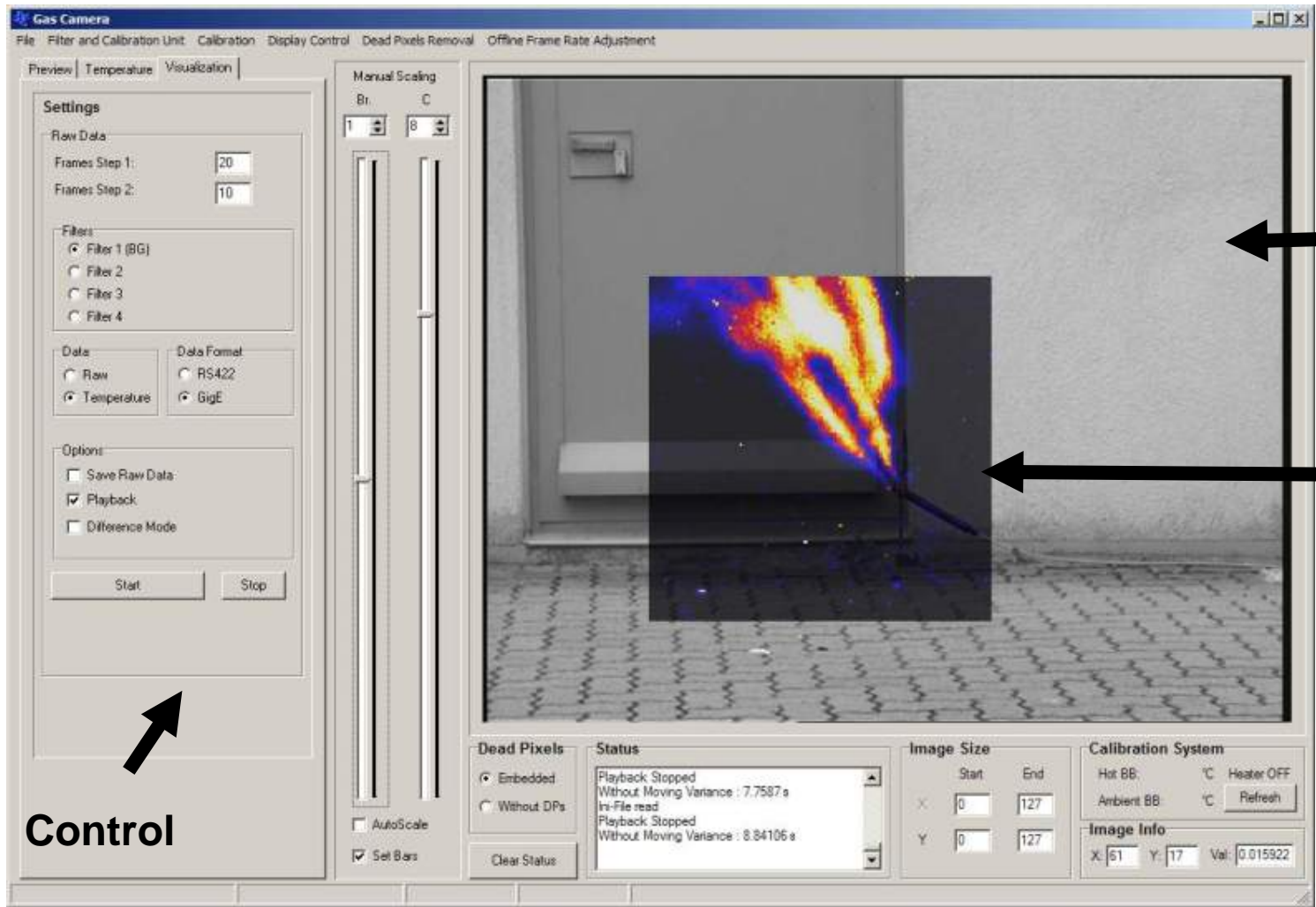
Detector-Array

Frame Grabbers

- Full functionality implemented in prototype system



3. Software-Status

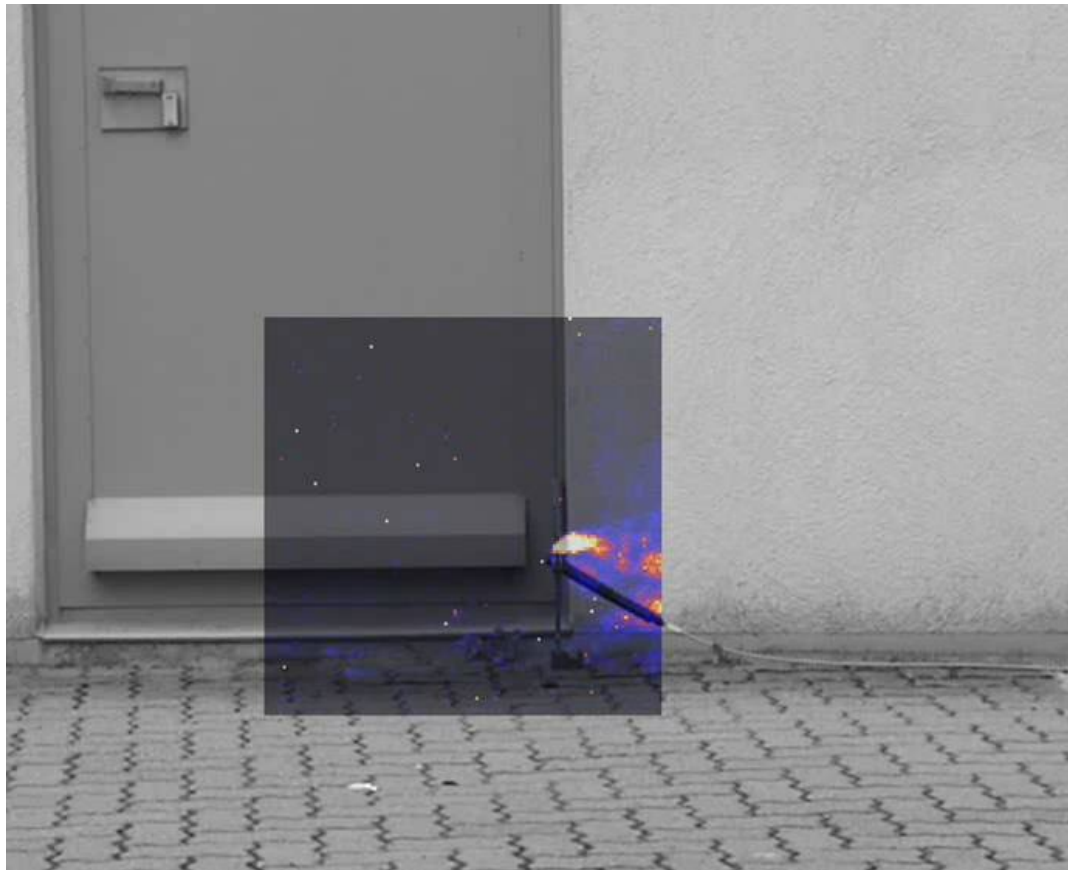


← Video Image

← Gas Image overlay

↑ Control

3. Measurements



Air temperature : 15.1 °C
Wall temperature : 18.3 °C
Distance : 6 m
Release rate : 340 L/h

3. Measurements



Air temperature : 17.2 °C
Wall temperature : 21.2 °C
Distance : 14 m
Release rate : 34 L/h

4. Status and Next Steps

- Automatic calibration unit ✓
- Gigabit ethernet “Frame Grabbers” implementation ✓
- System control via ethernet ✓
- Control-Electronic development ✓
- Video image background and gas image overlay ✓
- Control and analysis software development ✓
- Basic-Detector-Array development ✓
- Detector-Array implementation
- Market study
- Milestone I (Prototype finished): October 2007
- Field trials under real conditions