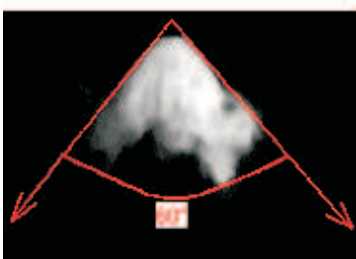
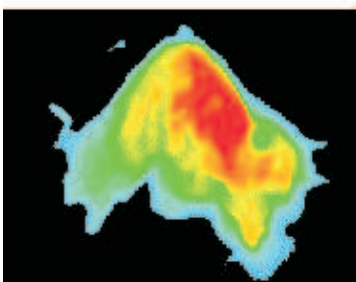
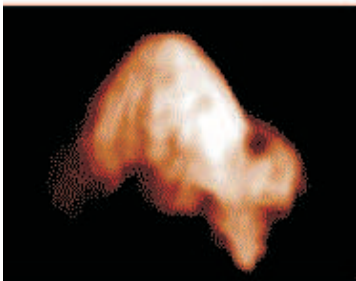
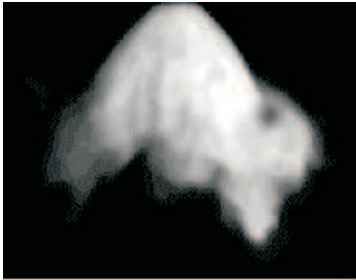


CCD-Cam - High Resolution Camera System



Examples of some Displays Opportunities

Today the CCD-technique is an integral part in the engine development. Without visualization techniques it is not possible anymore to develop new engine concepts.

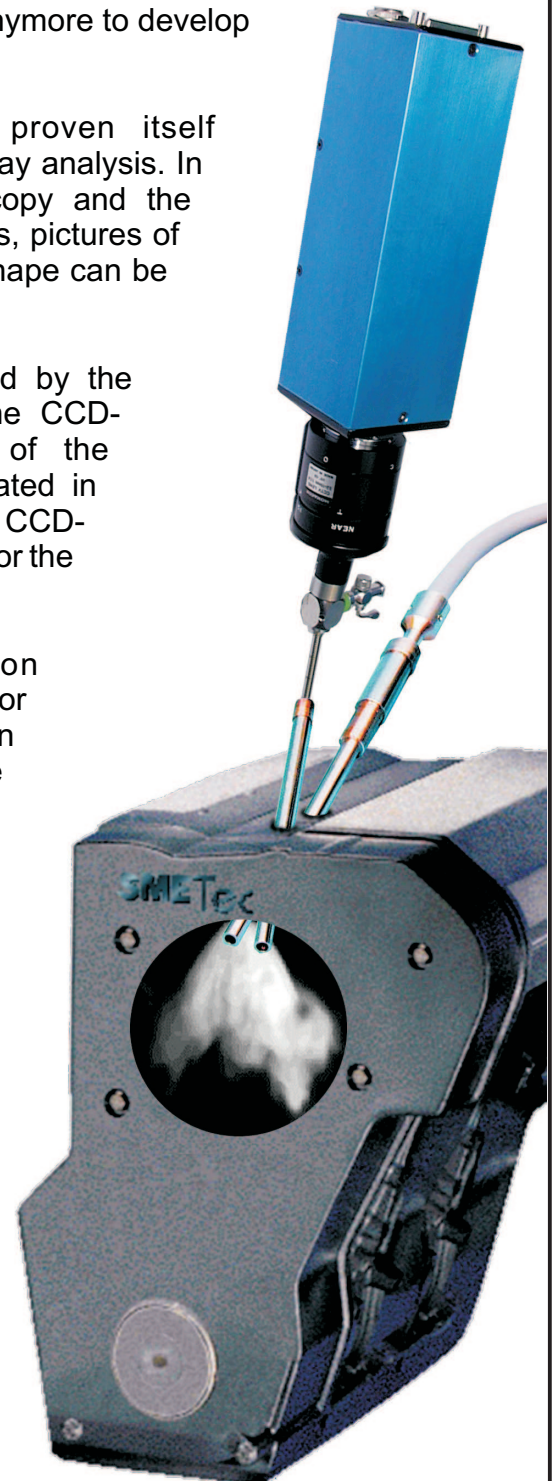
This new technique has proven itself especially for the injection spray analysis. In combination with the borescopy and the traditional combustion analysis, pictures of the spray development and shape can be obtained.

The CCD-technique is limited by the restricted UV-capability of the CCD-chip. A considerable part of the combustion spectrum is situated in the UV-range which makes the CCD-technique only partly suitable for the combustion analysis.

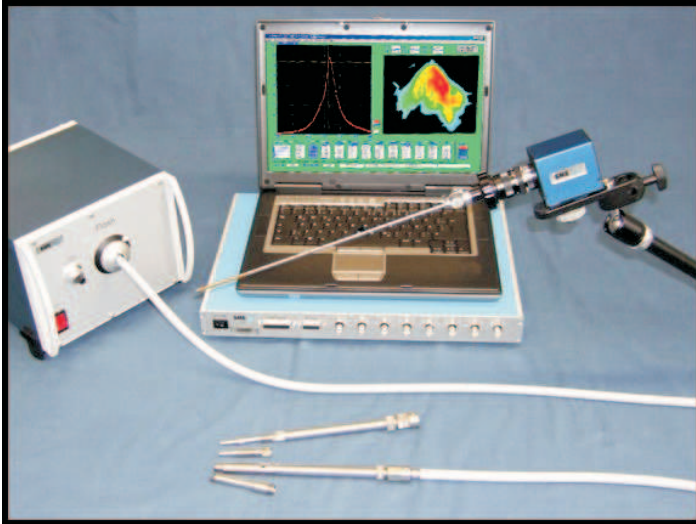
The high visual resolution however is especially suited for the spray analysis, where even small drops can be distinguished.

Combined with an illumination unit and the especially for test bench applications designed software, the CCD-Cam is a „Plug and Measure“-system which only requires the user to create the engine specific accesses.

Optionally, the user can order a different camera or the new “All in one” probe. This probe entails the borescope and the illumination fibre-optics.



CCD-Cam - High Resolution Camera System



Advantages

High Visual Resolution

Easy Handling

Developed for Test Bench Applications:

- Trigger / CDM Inputs
- Synchronization with other Devices
- CDM or Internal Clock

Combination of Visualization and In-Cylinder Pressure Indication on One Software Screen

Applications

Spray Investigations: Motored or Fired
Limited for Flame Analysis

Properties

Resolution:

1360 * 1024 Pixel

Memory:

unlimited

Interface:

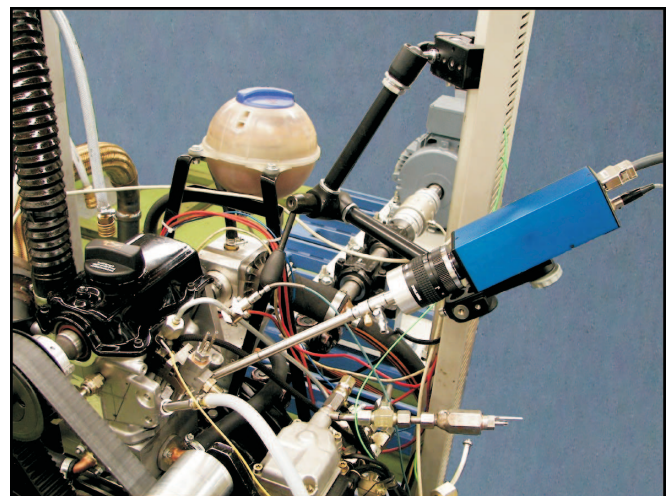
Ethernet/PCI

Spectral Response:

380- 950 nm

Delivery

Optical Combustion Chamber Probe
Cooled Borescope
Coupling Borescope / Camera
Lenses
CCD-Camera
Illumination Probe
Illumination Fibre Optic
Flash for Stroboscope Mode
Combustion Indication System COMBI
„All In One“-Software COMBI-SIS for CCD-CAM and COMBI
Adaptation Aid: camera / engine



Source: University of Trier