Measurement Solutions

Applications for CRS measurement technology in the industrial environment have often been limited by the high cost of the hardware. ATI's SpectraSens CRS offers a more affordable system that provides you the measurement precision you want at a price you can afford. If you have measurement problems for some of the following gases, contact us to discuss your application. An affordable solution may be no more than a phone call away.

Gas	Range	Sensitivity
H_2S	0 - 10 PPM	10 PPB
CO_2	0 - 1000 PPM	1 PPM
NH_3	0 - 10 PPM	1 PPB
H_2O	0 - 10 PPM	5 PPB
CO	0 - 500 PPM	500 PPB
HCN	0 - 10 PPM	5 PPB
C_2H_2	0 - 5 PPM	1 PPB
CH_4	0 - 5 PPM	5 PPB

Interference Free Measurement

•

Fast Response

•

PPB Sensitivity

•

No Calibration Required

•

Industrial Packaging

•

Minimal Maintenance

Contact ATI with your application questions today!

ANALYTICAL TECHNOLOGY

6 Iron Bridge Drive
Collegeville, PA 19426

610-917-0991
fax 610-917-0992

sales@analyticaltechnology.com
www.analyticaltechnology.com

1-800-959-0299

ATi UK

Unit 1 & 2
Gatehead Business Park
Delph New Road
Delph, Saddleworth OL3 5DE

01457 873 318
fax 01457 874 468

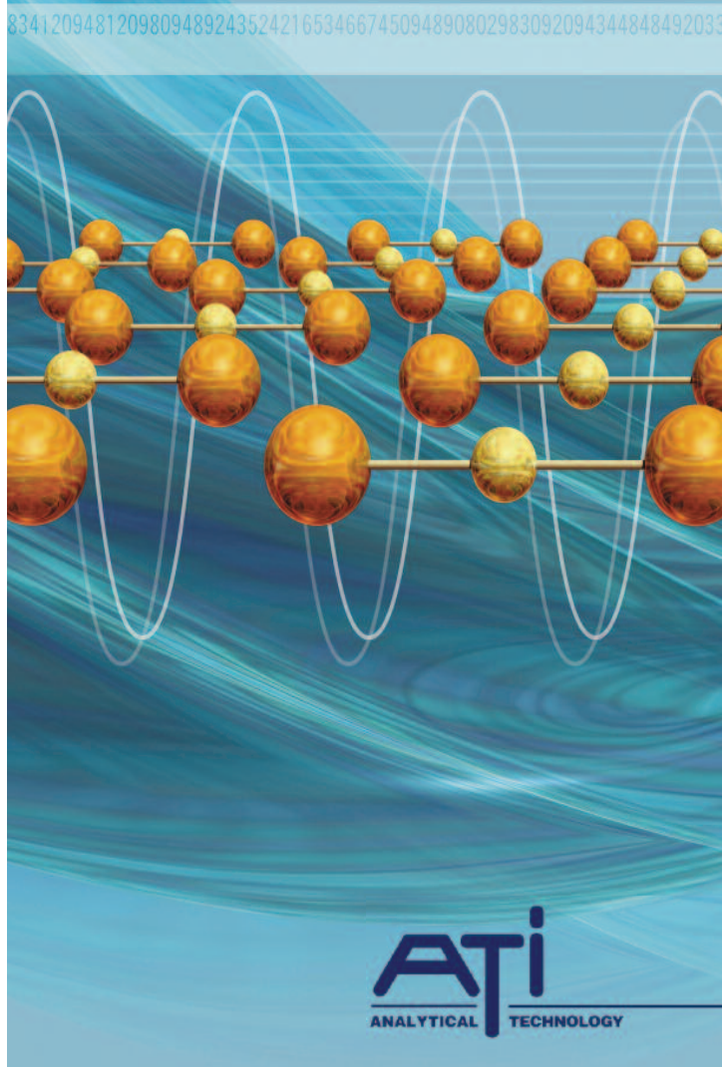
sales@atiuk.com

CRS 2/10

Spectra-Sens CRS

The New Wave in Precision Gas Monitoring

Cavity Ring-Down Spectroscopy for Industrial Application



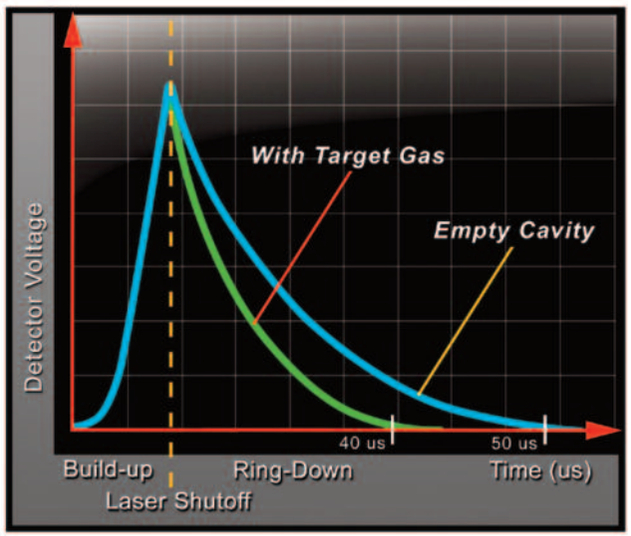
ANALYTICAL TECHNOLOGY

What is CRS?

Cavity Ring-down Spectroscopy is a method for enhancing the performance of optical absorption measurements resulting in extremely precise and sensitive gas monitoring.

Many simple gas molecules absorb energy in the near-infrared region. Gases such as CO, H_2S, CO_2, H_2O, HCN, and NH_3, are a few examples. Typical IR monitors for these types of compounds are available, but are generally only useful for high concentration measurements. Sensitivities can be increased by making the path length very long, but this often increases mechanical problems.

CRS enhances the performance of optical absorption measurement while eliminating some inherent weaknesses. While normal absorption devices measure the MAGNITUDE of the absorption of infrared energy, CRS is a time based measurement that depends on the RATE of that absorption. ATI's Spectra-Sens CRS uses this technique to deliver continuous monitoring of specific gases with virtually no interferences and very rapid response. Best of all, the measurement method does not require calibration gases.



Oscilloscope trace of decreased ring-down time with increase in target gas concentration.

How Does It Work?

A Cavity Ring-down Monitor uses a laser energy source tuned to a precise wavelength. Energy from the laser is injected into a cavity with highly reflective mirrors at each end. A sensitive detector on the other end of the cavity measures a small amount of energy leaking through the mirror. This detector signal reflects the amount of energy contained in the cavity. When the cavity reaches a resonant threshold, the laser is instantly turned off. IR energy continues to bounce back and forth between the mirrors, with a small amount of energy leaking through to the detector. The detector signal reflects the rate of decay of the energy within the cavity. This same measurement is also made on the "empty cavity", where the target gas does not absorb. By knowing the ring-down time of the empty cavity, the decrease in the ring-down time due to gas absorption can be calculated with great precision.

CRS Assembly