Aspect

Aerosol Size and Shape Analyser

ASAS TECHNOLOGY

Rapidly Characterise the Size and Shape of Particle Populations

For many years, instruments that measure aerosol size distributions have been available. However, the addition of valuable shape information enables much deeper understanding of particle populations. Since most particles, either naturally occurring or manmade, are not perfect spheres, particle shape is an important parameter that particle species can be classified. Using Biral's ASAS Technology, the Aspect is a particle analyser combining size and shape characterisation for laboratory or industrial applications.

At the heart of ASAS Technology lies a unique method of laser light scattering. The instrument performs a rapid analysis of the transient spatial intensity distribution of scattered light from single particles. This information can then be interpreted to characterise the particles in terms of both size and shape parameters.

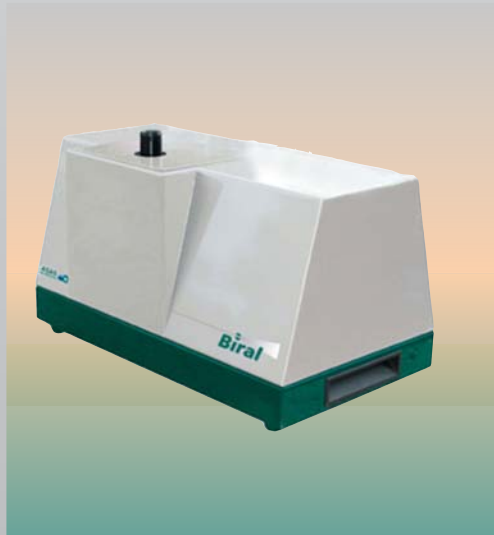
APPLICATIONS

PHARMACEUTICAL & CHEMICAL INDUSTRY
- Particle Design and Formulation
- Real-time Monitoring and Control of Particle Production Processes

AEROSOL SCIENCE

ENVIRONMENTAL MONITORING
- Fibre / Bioaerosol / Pollution Concentration

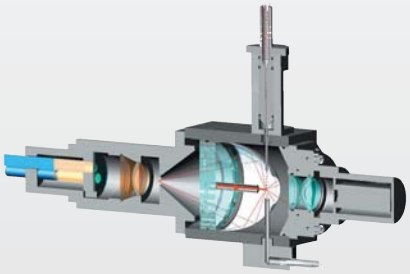
CIVIL DEFENCE BIODETECTION
- Monitoring Bioaerosols Levels



Aspect's Strengths

Aspect performs measurements on single particles and is not subject to the limitations of ensemble analysis. The instrument is extremely effective for characterising particles smaller than 20 µm when a technique is required for:

- **Identifying subtle differences between aerosol or powder samples**
  Even when particle populations have continuous size and shape distributions, Aspect has the sensitivity to spot very small changes in size and shape characteristics.



- **Discriminating particle types within aerosol or powder mixtures**
  Aspect can discriminate discrete particle classes within a mixture by characterising particle shape. As a result, separate size or shape distributions can be generated and the ratio of particle species can be calculated.

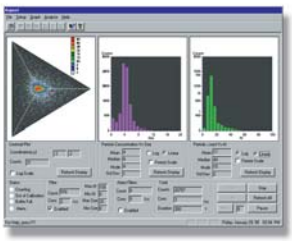
Aspect's Features

Device Features

Particle size:	0.5 - 20 µm
Size resolution:	0.5 µm
Real-time particle counting:	at up to 20,000 / second
Dimensions:	L 47 cm x W 27 cm x H 26 cm
Weight:	20 kg
'Asymmetry Factor' shape parameter:	0-100

Isokinetic inlet for optional ambient sampling

Software and Analysis Features



- Easy to use software running from MS Windows on a standard PC
- Data can be exported to Excel or to other analysis software
- Automated diagnostic routine
- Aspect's own analysis software enables real-time and simultaneous data display including: size distribution, shape distribution, particle count as a function of time, particle count as a function of size and shape
- Software filter function to separate particle classes or remove unwanted background
- Alarm function indicating particle population has moved outside control limits

Intricate Systems

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ASAS TECHNOLOGY

The best protection . . .

. . . is rapid detection

VeroTect

real-time
generic biodetector

Real-time, generic biodetection

VeroTect™ is the latest addition to the family of aerosol sensors and provides next generation, real-time, generic biodetection capability.

VeroTect™ adds fluorescence characterisation to the proven Biral ASAS™ (Aerosol Size And Shape) technology. This unique combination allows **VeroTect**™ to characterise airborne particles to an unparalleled extent, providing a reliable early warning of bioaerosol attack.

Features

- Very low cost of ownership (no operational consumables)
- Sophisticated detection algorithms
- High level of discrimination and low false alarm rates
- Compact and easily deployed
- Operational within 5 minutes
- High reliability, low maintenance
- Wide range of applications in military, civil defence and aerosol research

Principle of operation

VeroTect™ characterises the ambient background aerosol and detects changes associated with the presence of biological threats.

Sampling

A sophisticated air sampling system which includes an aerosol to air concentrator is used to ensure optimum sensitivity.

Fluorescence

Fluorescence is measured on a bulk sample of the aerosol. **VeroTect**™ uses an innovative light source centred on 280 nm, which is considered to be the optimum excitation wavelength for biodetection.

ASAS™ Technology

Characterisation by size, concentration and especially particle shape is a powerful means of distinguishing between potential threat and benign interferents such as pollen and diesel fuels. ASAS™ technology has been operationally deployed in the UK armed forces for several years.

Enhanced detection

Low false alarms,
VeroTect™ provides a high level of discrimination between threats and interferents with reduced false alarms due to the unique combination of particle characterisation methods. This gives the end user a higher level of confidence in detection performance.

Sophisticated detection algorithms
Application specific software and sophisticated data processing techniques allow the optimum detector performance to be matched to customers' requirements.

Modular design

VeroTect's™ modular design allows easy integration into systems and multi-platform applications. Data processing and instrument control is provided by an embedded computer that can provide external communications via Ethernet connection or a high-speed serial link.

With low cost of ownership, VeroTect™ has wide ranging applications in military and civil defence for both standalone point detection or as part of a sophisticated sensor network and in areas of aerosol research and environmental monitoring.

VeroTect™ provides next generation real-time, generic biodetection to counter an ever increasing threat.

VeroTect™
Military version

Specifications

As a testament to its pedigree, VeroTect™ has been independently tested and selected as the generic* biosensor for the UK armed forces ISMS system.

A key component of VeroTect™ is the Biral ASAS™** technology which has been successfully deployed in the UK Armed Forces PBDS biodetection systems for several years and is now a key element in the upgraded IBDS system.

** In biodetection, the term generic refers to the ability to discriminate bioaerosols from the normal background.*

***Originally developed in conjunction with the University of Hertfordshire and Dstl, Porton Down, UK.*

GENERAL	
Dimensions	
In service (with sampling head):	496 mm (d) x 460 mm (w) x 960 mm (h)
In storage (case size):	700 mm (d) x 700 mm (w) x 695 mm (h)
Mass (excluding case):	<30 kg
Power:	200 W max (110/220 VAC, 47-63 Hz or 18-36 VDC)
Total instrument flow rate:	33 litres per minute through x 10 concentrator
External interfaces:	Communication via Ethernet or high-speed serial link
PERFORMANCE	
ASAS	
Flow rate:	1 litre per minute
Particle size range:	0.5 µm to 15 µm
Size resolution:	0.5 µm
Asymmetry factor range:	0 to100
Max. particle throughput:	20,000 particles per second (=1,250 p/cc)
Fluorescence	
Flow rate:	2 litres per minute
Excitation wavelength:	280 nm
Fluorescence channel 1:	330 nm to 650 nm
Fluorescence channel 2:	420 nm to 650 nm
ENVIRONMENTAL	
Temperature range	
Operational:	-33°C to +55°C
Storage:	-33°C to +70°C
Humidity range:	up to 95% RH, non condensing
Shock and vibration:	to DEF STAN 00-35
EMC:	to BS EN 61000-1-6 and BS EN 61000-6-3

The VeroTect™ is in continuous development and specifications may be subject to change without prior notice. E. & O.E.

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