

## Petroleum coke

### Size and shape analysis for improved conductivity of electrodes

In the Metal Industry monitoring of the raw material for electrodes is exceptionally important to increase the quality of the finished product. With the aid of the CAMSIZER many customers in this sector have been able to improve their production processes.



#### What is petroleum coke?

Petroleum coke is a black, solid material with a high carbon-content of >95%. Besides some special applications in the chemical industry, petroleum coke is mainly used as a raw material for **graphite electrodes**.

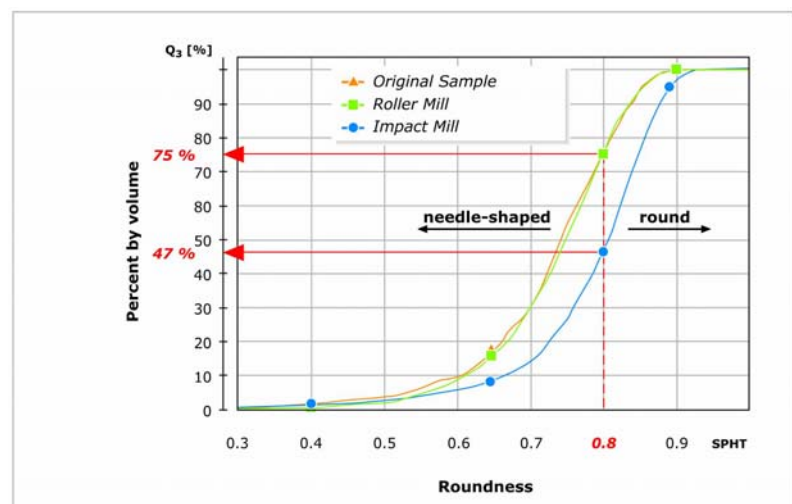
In order to obtain high-quality stainless steels and aluminium in the electric steel and non-ferrous metal industry, arc discharges are used in which a high current from several graphite electrodes passes through the material to be melted. The electrodes and in particular the nipples that are used for the screwed joints of the continuously fed-in electrodes must satisfy high quality demands with respect to their electrical conductivity and their thermal and mechanical resistance.

#### Quality Assurance

Monitoring the ground petroleum coke, the raw material for the electrodes, is particularly important as both the particle size and shape of the ground material are considerably important for the quality of the finished product.

In order to meet the high demands placed on the finished product, the particles need to be needle-shaped and also oriented in the preferred direction during the extrusion process. Needle-shaped petroleum coke particles help to improve the strength of the produced electrode units. However, the required shape analysis of the particles cannot be carried out by analytical sieving nor (effectively) by microscopy as this only covers a few particles with a low statistical certainty and is very time-consuming and thus economically unattractive.

The best possible solution for this task is the digital image processing system **CAMSIZER** which determines both the particle size and particle shape of a dry, pourable sample in one single measurement.

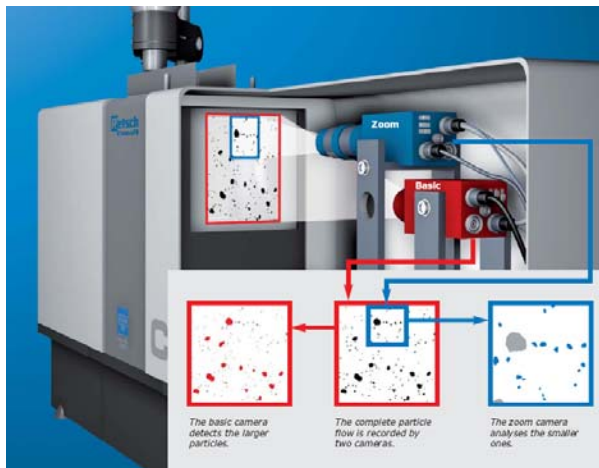


CAMSIZER graph showing a particle shape property (roundness)

## Benefits at a glance

- Measurement of statistically relevant sample amount
- Short measuring times (2 – 3 minutes)
- Reliable and reproducible results
- Particle shape measurement possible

## Measuring Principle



The patented measuring setup of the CAMSIZER – two digital cameras as an adaptive measuring unit – improves and optimises particle analysis by digital image processing. Therefore, it is possible to measure a wide range of particles from 30 µm to 30 mm with extreme accuracy, **without having to switch measuring ranges or make adjustments**. The sample is fed in from the feed channel so that all particles fall through the measurement field. During the measurement procedure the two digital cameras (CCD) perform different tasks. The basic camera (CCD-B) records large

particles, the zoom camera (CCD-Z) records the small ones. The contact-free optical measurement is carried out in real time and simultaneously obtains all the required information about particle size and particle shape. A modularly configurable online version of the instrument has been developed to allow automated measurements to be conducted continuously.

For further information please visit our website [www.retsch-technology.com](http://www.retsch-technology.com) or contact us personally:

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