SIKORA
Technology To Perfection

# CENTERVIEW 8000

Non-contact measuring devices for cable production lines

- 8-point-eccentricity measurement
- 4-axis-diameter measurement
- 8-point-ovality measurement

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Non-contact measuring devices for cable production lines

In the increasingly competitive global market, cable manufacturers are constantly concerned with improving quality and maximizing returns. The need for reduced material consumption combined with online quality control and minimized rejection of finished products calls for both a reliable and innovative partner for measuring and control technology. Furthermore, the globalization with the production sites at the place of demand requires reproducible processes.

## Application

CENTERVIEW 8000 is a non-contact gauge head providing continuous online measurement. The 8-point-eccentricity, 4-axis-diameter and 8-point-ovality measurements ensure highest accuracy to leave nothing to be desired. The system is perfectly suitable for the production of coax cables, LAN cables, automotive and installation cables. The CENTERVIEW 8000 is the only online eccentricity measuring device in the market with integrated 4-axis lump detection.

## Measuring ranges

SIKORA offers two versions, each specifically designed for your product: CENTERVIEW 8010 for product diameters from 0.25 to 10 mm and CENTERVIEW 8025 for product diameters from 0.5 to 25 mm. The CENTERVIEW 8010 is also optionally available for micro-coax cables with product diameters from 0.1 to 10 mm.

## Automatic gauge head positioning

CENTERVIEW 8000 is the intelligent combination of an optical and inductive measurement process. The inductive measuring circuit determines the position of the conductor and places the gauge head automatically in a way that the conductor constantly runs centric through the center of the gauge head. Guide rollers and manual configuration are unnecessary. This unique characteristic makes for easier set-up and handling and operation of the unit. Operators appreciate the ease of use and the high reliability of the system.

The optical measuring function is based on the principle of the diffraction analysis combined with pulse-driven laser diodes, whose light beam projects a picture of the cable on CCD line sensors in each of the four measuring axis. Within microseconds eccentricity, diameter and ovality are calculated from the shadow image of the product. To ensure precise single values even in the sub-micrometer range, the design of the gauge head does not include rotating mirrors or optical lenses.

## Reliability

The CENTERVIEW 8000 is extremely reliable. The lack of moving parts in the system ensures freedom from maintenance and guarantees reliability at all line speeds. Calibration is only done during setup and is unnecessary thereafter. Accurate measuring values, high quality, production optimization combined with substantial cost reductions are the principal benefits of the CENTERVIEW 8000.


CENTERVIEW 8025e

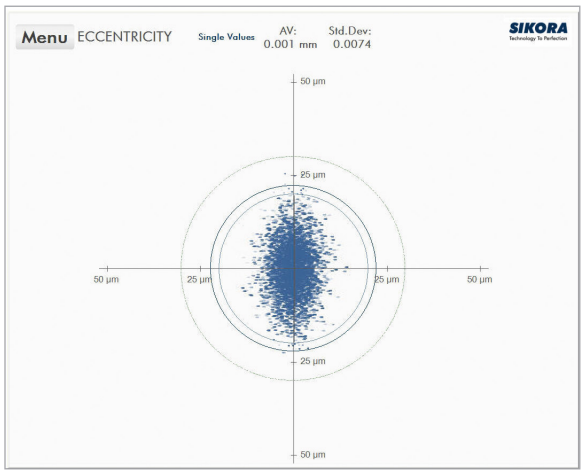

CENTERVIEW 8010e

## Unique scatter plot

The scatter plot is an alternative display mode of the measurements being made at the processor system ECOCONTROL. With the help of the scatter plot, the distribution of the short-term variations of the eccentricity is shown. The plot consists of 5,000 points, whereby each point represents an actual single value of the eccentricity (value and direction). The overall distribution of the scatter plot easily highlights the standard deviation of the eccentricity.

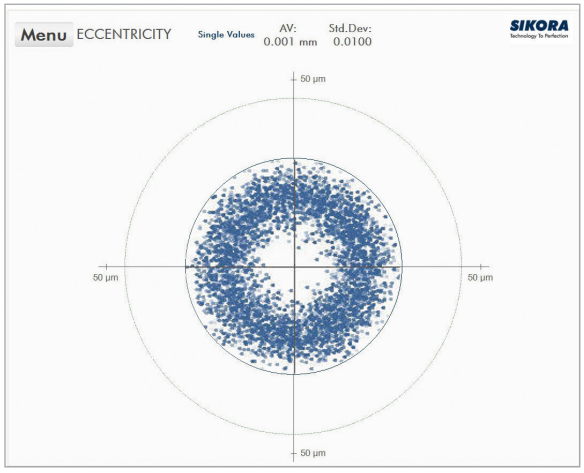

### Random type distribution of the single values

A random distribution of the single values of the eccentricity shows their range of variation. The representation helps to optimize the extrusion process with regard to a minimum standard deviation.



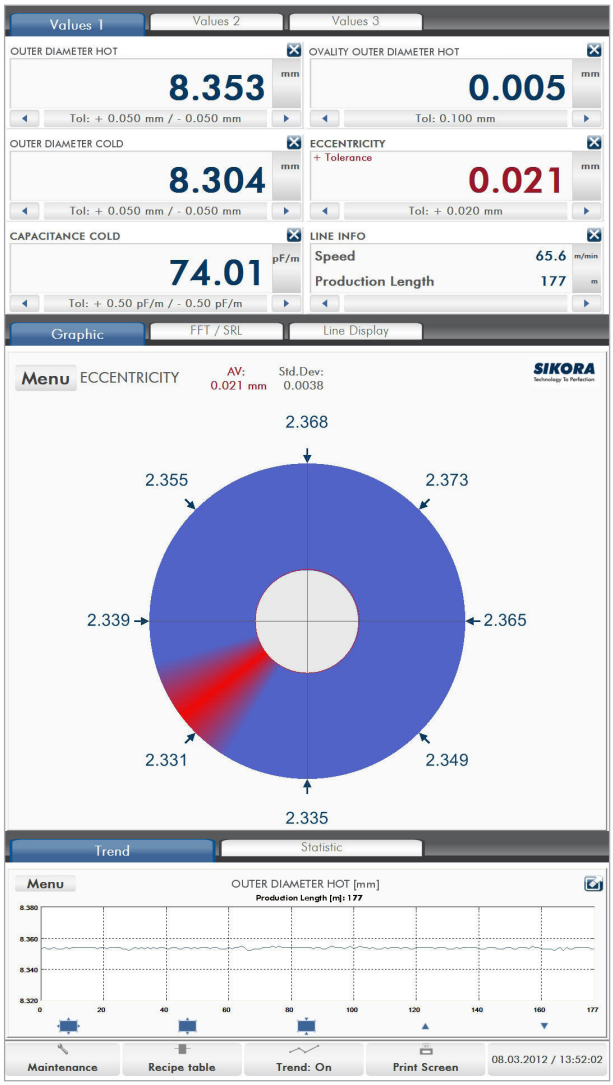

### Ellipse type distribution of the single values

An ellipse type distribution of the single points can happen, if the conductor is oscillating or vibrating in one direction directly before entering the crosshead and which causes eccentricity variations.




### Ring type distribution of the single values

A ring type scatter plot indicates that there is a permanently rotating eccentricity value, which could be a result of a rotating/oscillating conductor prior to the extruder crosshead. With a standard presentation of eccentricity only (as shown on the next page) a permanent rotating eccentricity would not be visible.




ECOCONTROL 6000 main screen with standard presentation of eccentricity

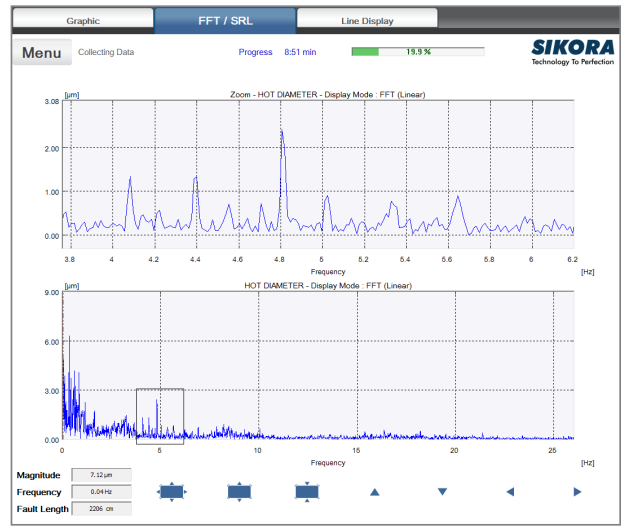
## Hot/Cold Control

To achieve high product quality and low material consumption SIKORA offers the Hot/Cold Control module HC 2000. Integrated in the processor systems ECOCONTROL 6000/1000, the HC 2000 continuously calculates the material shrinkage and takes it into consideration when the automatic control of the diameter is selected.

The advanced SIKORA concept compares the hot and cold values of the diameter at the same cable position by means of a speed controlled delay time memory. For this application, the CENTERVIEW 8000 is combined with a gauge head of the LASER Series 2000/6000. Alternatively, the CENTERVIEW 8000 and the LASER Series 2000/6000 can be used for the hot or cold diameter measurement.

## FFT analysis

A typical combination, especially for data and coax cables, is the ECOCONTROL 6000, LASER Series 2000/6000 for the hot diameter, CAPACITANCE 2000 for the capacitance values and CENTERVIEW 8000 for the calculation of eccentricity values and cold diameter. With the help of these devices, FFT analysis can be realized and the Structural Return Loss calculated.




FFT analysis

## Integrated monitor

Integrated in the CENTERVIEW 8000e series is a 7" TFT monitor, which displays production data. The operation is clear and menu-driven via a touch screen.

## Measurement of micro-coax cables

For a number of applications such as mobile phones, LED displays or medical probes micro-sized wires are required. These cables have a conductor diameter of 25 µm with an insulation wall thickness of 80 µm. For these diameter ranges, cable specifications have to be exact in order to transfer high-frequency signals without loss. Especially for the measurement of eccentricity, wall thickness, diameter and ovality of micro-coax cables, the CENTERVIEW 8010 is also available for product diameters from 0.1 to 10 mm.


CENTERVIEW 8025e with 7" monitor

## Diagnosis interface

Directly integrated into the gauge head is a RS232 diagnosis interface for the connection to a PC/notebook. In combination with the SIKORA diagnosis software, which is offered with the gauge head, product relevant information such as trends, statistical data with average value, maximum value, minimum value and standard deviations can be displayed via this interface.

Furthermore, FFT Spectral Analysis for the recognition of periodic variations of the diameter as well as a prediction of the Structural Return Loss (SRL) are included. The configuration of the Profibus interface or the analog outputs is also done via the SIKORA diagnosis interface.

## Interfaces

Like all SIKORA devices, the CENTERVIEW 8000 offers a variety of interfaces (RS485, Profibus-DP) for data transfer to a computer or the processor systems ECOCONTROL 6000/1000/600.

## Stand-alone gauge

The CENTERVIEW 8000 is not only designed for an accurate online measurement but as a stand-alone gauge, also suitable for the direct connection to other control systems or SPC (Statistical Process Control).

### Outstanding features

- Non-contact 8-point-eccentricity measurement
- 4-axis-diameter measurement
- 8-point- (4-axis-) ovality measurement
- Scatter plot shows distribution of short-term variations
- Automatic centering to the cable position
- Integrated 7" TFT monitor
- Measurement of micro-coax cables
- Extremely reliable at all line speeds
- MTBF = 12.8 years

### Key benefits

- Highest precision
- Reliability
- Absolutely maintenance-free

### The state-of-the-art measuring system therefore guarantees:

- Reproducible processes
- Quality assurance
- Reduction of material consumption
- Reduction of the scrap rate
- Increase of productivity

# CENTERVIEW 8000

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Certified according to DIN EN ISO 9001

## Technichal Data CENTERVIEW 8000

| Measuring Principle | Power supply |
|---|---|
| Non-contact, optical/inductive with 4-axis CCD line technology combined with impulse-driven laser light sources | 115 or 230 V AC ± 10 %, 50/60 Hz, 500 VA |
| **Applications** | **Interfaces** |
| For all round, single conductor wires and cables with solid or stranded conductors such as telephone cables, data cables (CAT 5, 6 and 7), coax cables, automotive or installation cables | RS485 + RS232 diagnosis interface<br>Optional: Profibus-DP (option at CENTERVIEW 8000e), industrial fieldbus (e.g. Profinet IO, EtherNet/IP, CANopen, DeviceNet) |
| **Exposure Time** | **Resolution** |
| 0.25 µs | Selectable 1 µm, 10 µm (factory setting is 1 µm) |
| **Measuring Rate** | **Ambient Temperature** |
| 500 measurements | + 5 to + 50 °C |

| | CENTERVIEW 8010* | CENTERVIEW 8025* |
|---|---|---|
| Sight Field | 12.5 mm | 28 mm |
| Measuring Range | 0.25 to 10 mm** | 0.5 to 25 mm |
| Accuracy | Eccentricity: better ± 1 µm***<br>Diameter: ± 0.5 µm | Eccentricity: better ± 2.5 µm***<br>Diameter: ± 1 µm |
| Repeatability | Eccentricity: ± 1 µm<br>Diameter: ± 0.1 µm | Eccentricity: ± 2 µm<br>Diameter: ± 0.2 µm |
| Dimension | 200 x 150 x 1,106 mm (W x D x H) | 200 x 319 x 1,110.4 mm (W x D x H) |

* All information is valid also for the CENTERVIEW 8010 e/8025e and CENTERVIEW 8010 C/8025 C models

** Optionally, the CENTERVIEW 8010 is also available for micro-coax cables with product diameters from 0.1 to 10 mm

*** Stranded: 2 µm (CENTERVIEW 8010), 5 µm (CENTERVIEW 8025)

Technical data is subject to change


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