Concentricity monitor CCM-1000/1010

Application

Concentricity monitor CCM-1000/1010 is an advanced, versatile system for measurement of coating concentricity during fiber drawing or off-line on rewinding/proof testing equipment. It features well known “forward scattering” principle, with addition of advanced pattern recognition, which allows numerical measurements on all standard refractive index acrylates.

Instrument displays the absolute value of non-concentricity, as well as the azimuthal angle, at which this maximum is detected, in real time, while logging the data for post-acquisition analysis or quality report. If real-time data is fed to a draw tower control system, coating concentricity can be monitored on process screens during whole draw operation, permitting also active concentricity adjustment through control system (if implemented). CCM successfully replaces traditional monitors with beam optics and glass screens, which require operators to visual evaluate scattering patterns and manually adjust coating applicator settings

Features

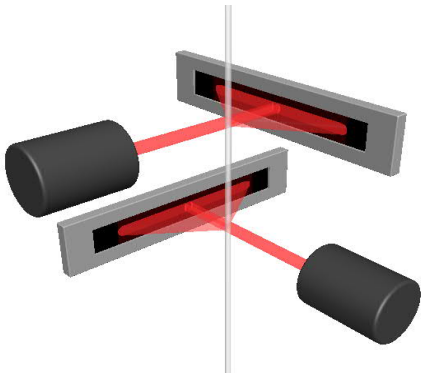
- Two measurement axes, with cameras positioned at 90° angles
- CCM-1010U features camera positioned in the same plane, for maximum precision
- CCM-1010D features cameras positioned in two planes (one higher than the other in vertical direction) to permit wider field-of-view for maximum sensitivity and more robust operation
- Easy high-speed threading via side slit opening in the CCM body
- Connection for purging gas to sweep internal space to reduce contamination
- Supports all standard refractive index acrylates (low index acrylate not supported)
- Numerical measurement of coating concentricity in absolute values
- Precise measurement of fiber position (limited to field of view ±2 mm of center line)
- No moving parts
- Logging of concentricity, fiber position and other parameters
- Easily connected to any PC with Windows 8 or 10 with USB 2.0 interface
- Model 1000 for special fibers and low draw line speed (up to approx. 200 m/min) – 15 fps
- Model 1010 for high draw line speed (up to and over 2000 m/min) – 150 fps
- Option: USB Analog Out module for connection to third party control systems

Measurement specification

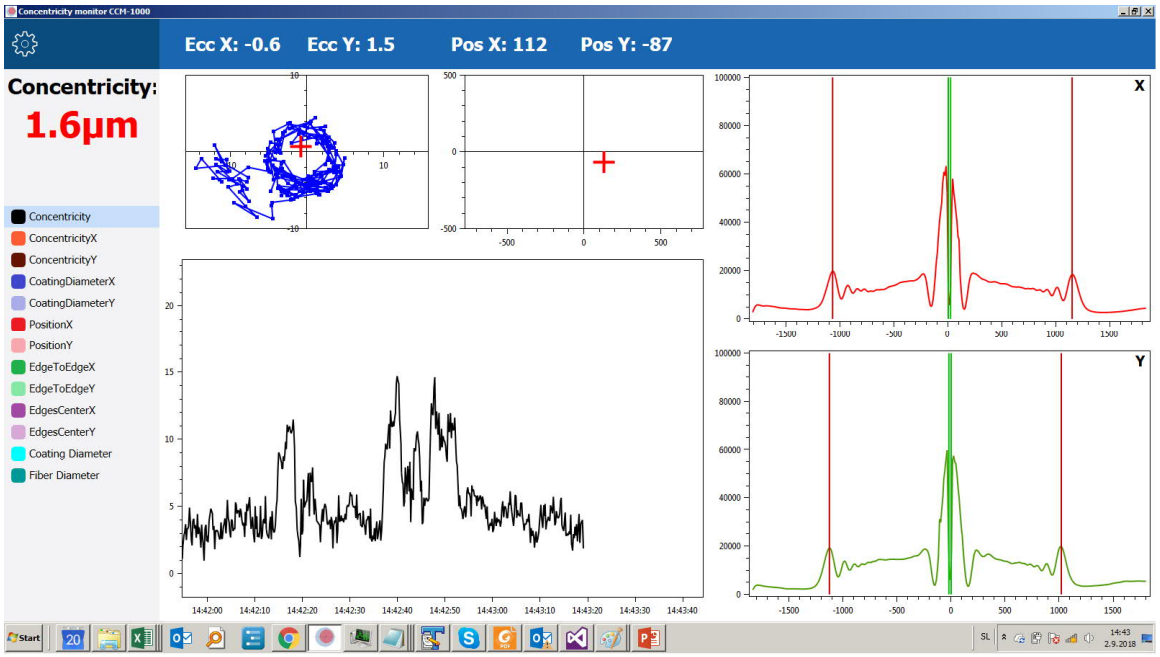
Fiber OD (with coating):	50µm - 1200µm (larger upon request)
Coating OD/glass OD ratio:	1.5 - 4
Concentricity measuring range:	0-20 µm depending on fiber/coating dimensions
Concentricity accuracy:	± 1 µm or better
Position measurement range:	Min. ± 1500 µm, max. ±2 mm
Position accuracy	± 10 µm
Camera speed	15 (model 1000) or 150 (model 1010) fps

Measurement Principle:

Two perpendicular laser beam sources are projected on fiber surface. Light beams pass through the glass and coating layers and create distinct scattering pattern, including information about relative positions of fiber towards outer coating. Patterns are acquired by two high resolution CCD sensors and transmitted to PC via USB interface. Image recognition software detects features in the scattered pattern and calculates eccentricity.



Additionally, scattering pattern is displayed on PC computer screen to allow operator to observe certain scattering features and control coating process.



Unit specification

Light sources:	Laser diode 650 nm
Sensors:	CCD
Weight	1.7 kg
Dimensions (LxWxH)	180x120x58 mm
Baseplate and cover material	Anodized aluminum, dust painted stainless steel
Computer connection	USB 2.0, 3.0
Software	CCM-1000 v4.1 for Windows 7,8,10
Power supply	Powered by USB cable
Mounting to X-Y table	4x M5 (bottom plate) (table as option)

Accessories

CCM units can be supplied with the following accessories:

CCM-ANA	*USB to analog out (8 channels) module) for connection to third party control systems*
CCM-BRK	*bracket for draw tower mounting (for Nextrom-type guide rail or other)*
CCM-XYT	*precision CCM positioning table with X-Y adjustment and tilt angle control*

Additional information

Visit *www.octech.si`applications* or write to *borutl@octech.si*

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