

# Spectro 4.0™

Smart Technologies

The first inline continuous color management system

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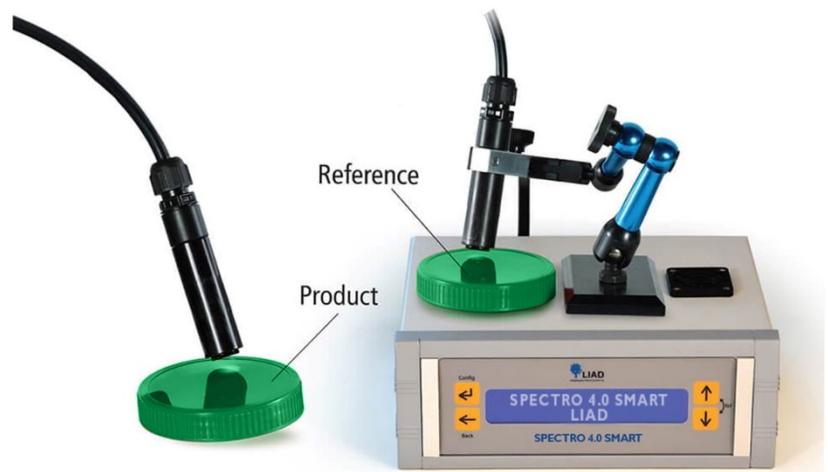
# Spectro 4.0™ Smart Technologies

## CISystems Color Integration by Ampacet brings Industry 4.0 innovation to color management

For the first time, advances in smart technology can increase production efficiencies and reduce waste in the coloration processes for a wide variety of applications. CISystems, a business of Ampacet, introduces Spectro 4.0™ Smart Technologies: a patented color measurement system that offers Industry 4.0 innovations such as optical real time, in-line monitoring and correction capabilities to ensure every part meets color specifications. Multiple optical sensors communicate real time color data during the manufacturing process, without interrupting production to take samples. Every part produced can now be measured. Color measurements are instantaneous and historical data is collected to improve future productivity. Spectro 4.0™ Smart technology removes all subjectivity associated with monitoring color standards.

This highly accurate QA solution allows manufacturers to maintain uniform color standards from in-house or contract processors around the world, while significantly reducing raw materials, rejected parts and scrap. Spectro 4.0™ Smart technology also provides greater control and opportunities to make color adjustments when manufacturing with PCR or regrind.

This is the first spectrometer that can be connected to a feeder for automatic, real time color adjustments. Spectro 4.0™ Smart technology integrates exclusively with CISystems' patented **SpectroMetric™** feeder allowing automatically adjusted dosing of masterbatch to maintain consistent color quality within every part of the production run.



## How It Works

Spectro 4.0™ Smart technology operates real-time within the production line, providing immediate and actionable QA color management. Spectro 4.0™ Smart technology is a single system with multiple and interchangeable probes, enabling simultaneous multi-point measurement of haze, opacity, reflection and transmission and allows selection from differential or absolute testing modes.

Spectro 4.0™ Smart technology allows positioning of the probes in and around the actual part and/or extrusion process while withstanding the dirt, heat and vibrations of the production machine. The probes enable “plug-and-play” installation on conveyors, robotics or extrusion/molding lines and require no special alignment procedures or complex calibration routines.

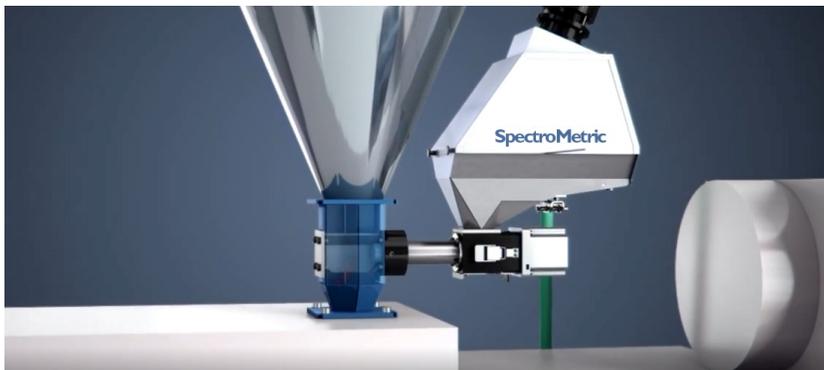
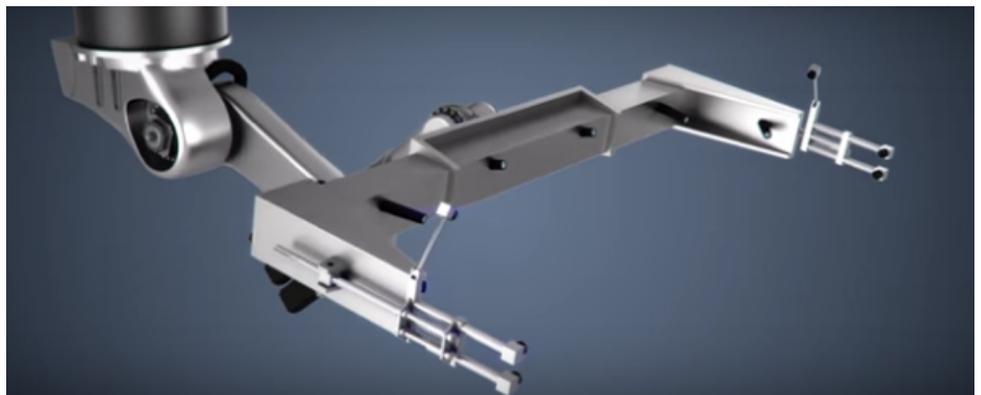
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Continuous color measurement means no interruptions to test samples

Multiple optical sensors can be easily integrated into robotics, conveyors and extrusion and molding lines



## SpectroMetric™ smart feeder takes dosing precision to the next level

The patented **SpectroMetric™**, the first feeder driven by an in-line spectrometer, features innovative mechanical design guided by advanced algorithms to deliver unmatched dosing precision. When integrated with Spectro 4.0™ Smart technology, the complete system automatically adjusts the dosing as directed by real-time Spectro 4.0™ sensors during a production run. Governed by real-time color measurements, and combined with auto-adjusting dosing precision, **SpectroMetric™** is a revolutionary advancement in masterbatch feeding technology. The whole system seamlessly feeds, tests, monitors and corrects without human intervention.

# Spectro 4.0™ Smart Technologies

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Spectro 4.0™ Smart technology is available through licensed agreements, which allows greater flexibility to upgrade existing software and equipment.

## Benefits

- First system that provides continuous color measurement (reflection, transmission, opacity, haze), eliminating the need to interrupt production to test samples. Select from Differential or Absolute testing modes
- Significantly reduces product rejects and scrap levels caused by out-of-spec color parts
- Operates within extremely tight tolerances to predict and maintain lower masterbatch levels with confidence
- Run quality color parts consistently and standardize production lines in multiple facilities regardless of regional or global manufacturing location
- Historical data from each run assists in predicting and preventing future production issues, assuring greater productivity.
- Self-calibrating and self-sustaining system requires minimal maintenance. (Highly accurate to  $\Delta E < 0.1$ )
- Eliminates lot-to-lot variations in color commonly associated with increased use of PCR or regrind, thus significantly contributing to your sustainability objectives
- Licensing Spectro 4.0™ Smart technology eliminates the need for capital cost allocation, provides more flexibility and scalability and allows for easy incorporation of upgrades in software and equipment

## Applications

Any industry or process requiring precision color management can benefit from Spectro 4.0™ technology, including appliances, consumer packaged goods, automotive, medical, toys, textiles, wire & cable, industrial products and more.

## About CISystems

CISystems Color Integration is a new business unit created by Ampacet to radically change the way manufacturers use color in their products and processes. CISystems offers exciting color management options that help customers improve production efficiencies, reduce waste and achieve their sustainability goals. CISystems applies Industry 4.0 innovations based on patented technology developed by recently-acquired LIAD Weighing and Control Systems Ltd. LIAD has been a pioneer in plastic manufacturing technologies for over 40 years, and is today the leading developer of innovative feeders, blenders and quality control equipment.

The LIAD SMART label assures that CISystems' patented innovations are driven by LIAD intelligence for the highest accuracy in measurement software and design technologies.



Discover how **Spectro 4.0™ Technologies** can intelligently feed, test, monitor and correct color in-line.

Visit [Ampacet.com/CISystems](http://Ampacet.com/CISystems) or contact:

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