ACOMP

Monitoring Polymer Reactions in Real Time

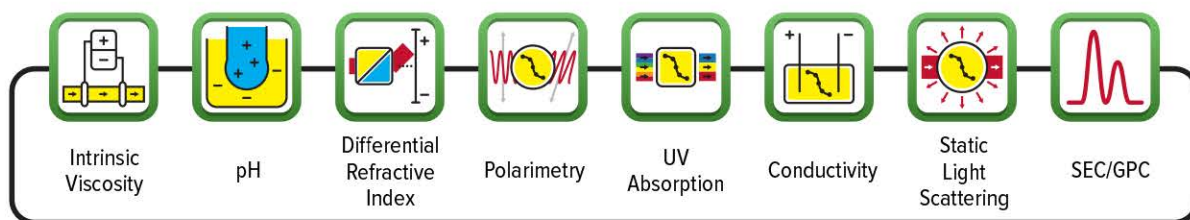**Fluence** Analytics

Introducing ACOMP

ACOMP, by Fluence Analytics, is a patented smart manufacturing system that continuously analyzes polymers during production, yielding realtime insight into polymer properties, reaction kinetics and anomalies during manufacturing.

How ACOMP Works

Step 1:

A stream of polymer is extracted from the reactor. ACOMP continuously quenches, dilutes and conditions the polymer stream for characterization.

| Intrinsic Viscosity | pH | Differential Refractive Index | Polarimetry | UV Absorption | Conductivity | Static Light Scattering | SEC/GPC |

Step 2:

ACOMP analyzes conversion kinetics, residual monomer PPM, time to completion, molecular weight and intrinsic viscosity.

Step 3:

ACOMP is integrated with the plant control system so that the operator can view and interpret ACOMP data to improve the manufacturing process. Automatic reports are generated showing historical trends, data analytics and correlations to process data.

CONTROL ROOM

Realtime Monitored Characteristics

- Molecular Weight
- Intrinsic Viscosity
- Composition
- Monomer Conversion
- Residual Monomer
- Process Anomalies

ACOMP Supported Polymer Families

- Acrylamides
- Acrylates
- Cellulose
- Elastomers
- Electrolytes
- Glycols
- Methacrylates
- Methacrylamides
- Phenylenes
- Phenylethers
- Styrenes
- Superabsorbents
- Urethanes
- Vinyl Alcohols

Challenges of the Polymer Industry

Poor Control
- Lack of realtime data prevents correcting process upsets
- Reliance on PhDs for modeling and intervention

Off Spec Product
- Batch rework and losses   • Higher inventory
- Periodic write-offs of dead stock

Reduced Efficency
- Slow or ineffective scale-up of new product   • Redundant lab work
- Poor determination of root causes due to lack of information
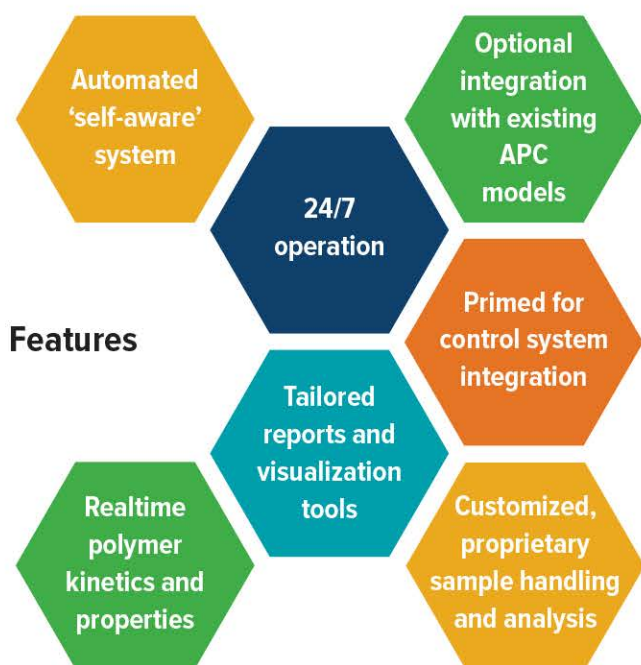
Quality Deviations
- Inconsistent batches
- Customer complaints of shipped "on spec" material with poor properties

Solution

ACOMP is the automated monitoring solution that produces realtime data about reaction kinetics and polymer properties which can be tailored for Industrial, Pilot Plant or Lab scale reactions.

Benefits

- Increased polymer yield, quality and consistency
- Optimized process control
- Reduced cycle times, VOCs and material usage
- Anomaly detection during production

Features

- Automated 'self-aware' system
- 24/7 operation
- Optional integration with existing APC models
- Primed for control system integration
- Tailored reports and visualization tools
- Realtime polymer kinetics and properties
- Customized, proprietary sample handling and analysis

Polymer Applications

Continuous:
- Monitor grade changeover
- Steady-state online quality indicator
- Post-polymerization modification: optimizes process
- Multi-stage crossover indicator: improve quality control and reduce production time

Batch, Semi-batch:
- Endpoint determination: optimizes cycle time
- Realtime quality indicator
- Process anomaly detection: reduces batch failure
- Post-polymerization modification: optimizes process

Types:
- Emulsion, solution & bulk
- Heterogeneous, multi-phase and grafting
- Free radical, controlled radical and living

The expert team at Fluence Analytics is ready to evaluate your application.

Contact us today!

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