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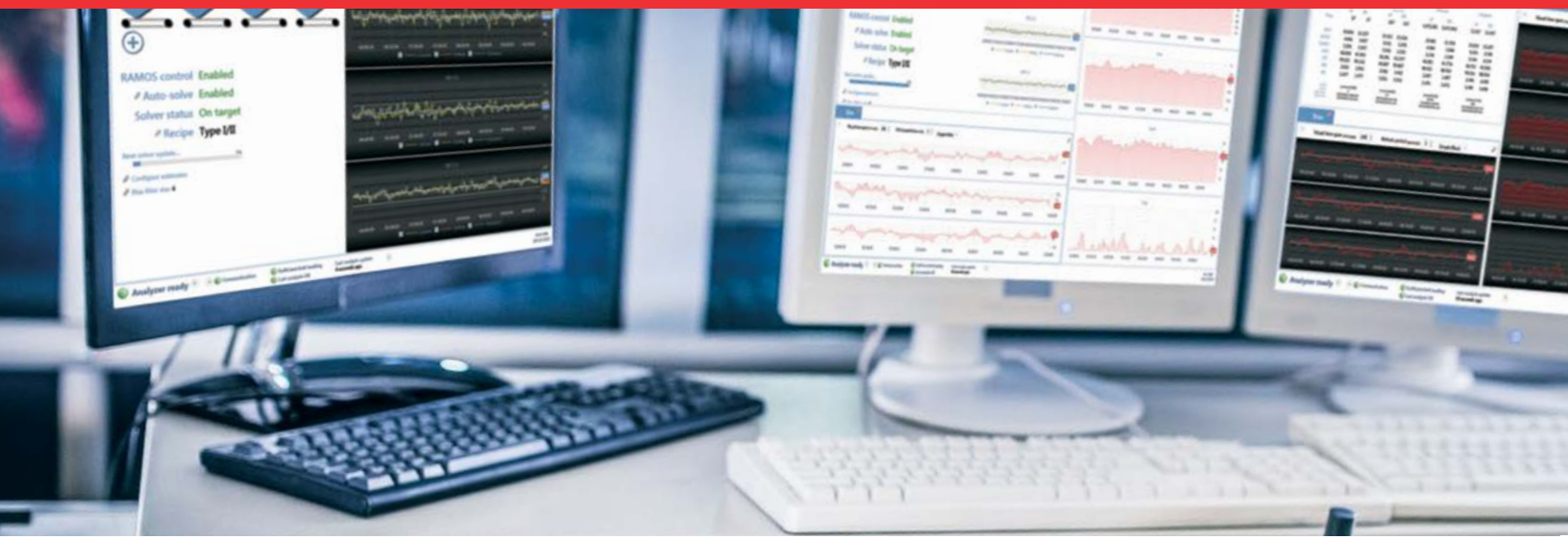

Thermo Scientific RAMOS

Automated quality control software for bulk, raw material blend proportioning

Thermo Scientifics' RAMOS (Raw Mix Optimization Software) is powerful, state-of-the-art software designed specifically to use high frequency analysis provided by online analyzers for quality control. RAMOS automatically adjusts multiple raw material source feeds to optimize blend proportioning, reduce chemistry variability and minimize cost.

Features

- Automatically controls raw material feed rates
- Optimizes raw mix blend quality
- Considers material costs
- Allows prioritization of quality targets
- Standard & custom quality control parameters
- Flexible plant connectivity
- Easy to configure & user-friendly
- Clear visual of process charts and trends

Benefits

- Consistent quality
- Reduced chemistry variability
- Reduced kiln upsets
- Increased kiln throughput
- Reduced kiln fuel costs
- Reduced grinding energy costs
- Extended kiln refractory life
- Extended quarry life
- Minimized use of highest cost, expensive materials
- Reduce or eliminate active blending in homogenization silos

RAMOS control works in conjunction with a CrossBelt online analyzer to monitor the chemistry of the raw material being carried on a conveyor and automatically issue optimal blend proportions to meet quality control targets. Quality parameter targets are entered into RAMOS and from the known analysis and the starting estimates of each raw material source; RAMOS adjusts raw material weigh feeders maintaining the composition of the mix on target while minimizing variability and the use of high cost materials.

Process optimization adjustments made by RAMOS are accomplished automatically, triggering proportioning changes as frequently as each minute. RAMOS accounts for varying time delays from the feeders to the analyzer and can accommodate multiple raw mix sources and control parameters. The highly effective control algorithm utilizes material cost minimization and allows the user to define priorities among the different control parameters.

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Seamless Integration

Thermo Scientifics' RAMOS blending software integrates and works seamlessly with Thermo Scientifics' Omni View interface software that is provided as a standard component of the online analyzer. Like Omni View, RAMOS is highly configurable, highly flexible and easy to use. The unique software provides trending and graphing capabilities that plot the current and historical status of process control parameters as well as RAMOS controller information.

Process Flexibility

RAMOS users are able to specify critical feeder response information such as time delays between the feeder and the analyzer, minimum and maximum allowed feeder rates as well as maximum rate of change between adjustments. Multiple product types with different quality targets are able to be defined and quickly selected when production type changes.

A unique and powerful feature of RAMOS is that only initial estimates of the chemistry of the source materials are needed. If minor errors in initial source chemistry are present these errors do not adversely affect RAMOS performance. The controller automatically adapts to errors and easily accommodates changes in source chemistry. All of this is accomplished without the need for the software to attempt to estimate actual source chemistry.

Information Exchange and PC Interfaces

Integration of RAMOS into a process line requires a communication interface with a plant control network. RAMOS is extremely flexible in this regard and is compatible with most major communication protocols. The most popular protocol in use today is OPC. The system configures easily as either an OPC Server or an OPC Client

Optional Software

Acculink is an optional software add-on which complements RAMOS and Omni View. AccuLink is a statistical analysis and calibration tool that allows automated calibration of Thermo Scientific online analyzers with laboratory X-ray analysis instruments.

Find out more at **thermofisher.com/PGNAA**

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