

21PLUS! – SYSTEM OVERVIEW

21Plus!™ Measurement and Control Platform

The newest release of 21Plus!™, is the very latest technology offered to the continuous web gauging market. This is the latest, significantly enhanced release of Thermo Electron Corporation's widely installed 21Plus! Measurement and Control platform. It takes all the proven features of 21Plus! and enhances them to include improved operating features and data security features, while maintaining the safety and security of proven operational experience.

21Plus! offers more than thirty fully tested application packages with measurement and control features that deliver high customer return on investment, while at the same time providing extremely flexible customization capability.

21Plus! offers an innovative approach to minimize risks associated with electronics and software obsolescence in the fast changing electronics world by introducing iBox™ – an innovative data processing solution, and Investment AssuranceSM – an innovative software refreshment program to keep customers safe from the traditional risks of software obsolescence and from fast evolving networked data security risks.

21Plus! utilizes a fully distributed architecture for reliability and security. Communications are Peer-Peer between components and it can be made fully redundant, with no single point of potential failure. Measurement and Control are performed in the scanning frames, not in a central PC, so system performance and security are dramatically enhanced versus PC based gauging systems

21Plus! is modular and scalable from a basic single sensor measure-only system, up to a comprehensive enterprise-wide integrated solution covering several line-wide systems with multiple sensors (up to 15); scanning frames (up to 6); multiple, simultaneous operator interfaces, local or remote; advanced controls tailored to specific process applications, and now, Ethernet based I/O.

Investment Protection

21Plus!'s unique fundamental design takes advantage of industry standard hardware and software technologies, to avoid technological obsolescence. This innovative and elegant approach allows Thermo and it's customers to take advantage of Thermo's continuous advancements. 21Plus! systems can stay current in the ever changing word of technology without requiring expensive periodic "upgrades". The Investment Assurance™ program is available only to 21Plus! owners.

Operator Interfaces

A variety of available operator interface configurations range from simple desktop based interfaces to environmentally hardened LC450 console enclosures and wireless tablet based portable interfaces. System computing power is generated by the latest PC workstations with DVD_R+ backup and Virtual Private Networking (VPN) for remote access or support. Large high-resolution touch screen monitors provide a user-friendly operator interface where operators can control all aspects of the production line.

Communication Capabilities

21Plus! provides powerful communication capabilities with Industry-accepted OPC standards, allowing the sharing of product and process data with popular software packages for data acquisition, database building, and quality analysis. WonderWare's Intouch provides the means to easily communicate with the outside world through hundreds of standard I/O Server links to most third party devices. Intouch also allows 21Plus!™ to be expanded by integrating other products from it's ever growing list of powerful productivity tools such as Industrial SQL server, SCADAAlarm, etc. Other advanced software options include RQMS, a powerful roll genealogy and disposition package that provides three-dimensional graphics for added process and quality analysis. These and other tools can be used to monitor the entire production process to identify potential quality issues before they seriously affect quality or production.

21Plus! combines Thermo's highly specialized measurement and control strategies with proven industry-standard hardware and software to provide continuous web manufacturers with a high performance measurement and control system that is powerful, yet easy to use and support. This combination of specialized technologies with mainstream implementation provides 21Plus! users with unparalleled product quality and production throughput.

21Plus! is installed and supported by the industry's largest dedicated gauging service organization.

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SCANNER PLATFORMS

- MarkIII Industrial Scanner 1 to 10 meters (Open ended frames available for Biax)
- Unibody L220 low profile scanner 0.7 to 2.2 meters (to fit reduced space)
- Box Beam C Frame 0.5 to 2 meters *(New)*
- Roller Frame, up to max roll width of 3.15 meters (For Air Calipers) and roll widths of 0.9 to 2.4 meters for ShadowMaster Sensors
- Box Beam mount for Back Scatter sensors *(New)*
- *Scanners are optionally available in custom paints*
- *Angled passlines are available and Hazard reduced frames are available as options*

SENSOR TECHNOLOGIES

- SpectraBeam FSIR in Transmission and Reflectance for multilayer discrimination
- MicroBeam FSIR (Full Spectrum Infrared) in Interference Mode for thin films
- Advanced Air Caliper for true thickness measurement
- ShadowMaster optical Sensor for true thickness measurement *(New)*
- Nuclear Sensors (PM and CL Series): KR-85, SR-90, AM-247, Transmission and Backscatter in various strengths. Available in wide gap geometry for special situations.
- Combinations of multiple sensors, including third Party sensors can be mounted on MarkIII Frames, for foam density measurements, optical property measurements and others

PROCESS CONTROL

- Multiple Automatic Profile Control (APC)
- Cascaded Control for Biax Processes
- MD (Average Control)
- TMC (Target Management optimizing MD Control)
- Adaptive Throughput Control
- Roll Speed Ratio Control
- 2 and 3 Zone Calendar Control
- Preset Control (Absolute and Adaptive)
- Feed Forward Control
- Mid-Range, Dual Gap, and Growth Compensation
- Windup Width Control
- Foam Density Control
- Combinations of Controls to optimize any web
- *Powerful Smith Predictor Algorithm is available for control of processes with long passlines)*

PROCESS I/O

- Ethernet based I/O *(New)*
- Multiple Digital Inputs
- Multiple Digital Outputs for Control and Alarms
- Multiple Analog Inputs
- Multiple Analog Outputs
- (Numerous add-on modules in NEMA enclosure are available for continuous monitoring of variety of process parameters and trending)
- zBox High Speed Data Interface Solution *(New)*

PROCESS VISUALIZATION DISPLAYS

- Split and Full Displays
- Profile Zoom Displays
- Edge Displays
- Roll Report Displays (Previous and Current)
- Polar Plot display (For Annular Dies)
- SPC Display and Histogram (Optional)
- FFT Display (Optional)
- Multi-parameter Trends for Process Monitoring
- Control Displays
- Diagnostic Profiling of any system variable *(New)*
- Multiple Diagnostics Displays
- ContourView Display Suite
- Die Mapping Display for Extrusion Webs *(New)*
- Biax Mass Map Display for Biax process *(New)*
- High resolution Biax Zoom displays *(New)*
- 100 scans overlay profiles *(New)*

PROCESS AND PRODUCT REPORTS

- Roll or Time-based Reports
- Code or Product Reports
- Shift Reports (configurable up to 4 shifts) *(New)*
- Summary Reports (Shift, Daily, or Weekly Totals)
- Roll. Txt file for exporting to Excel Spreadsheet
- Slit Roll Report
- RQMS Roll Genealogy and disposition package (optional)

DATA SECURITY

- Extensive password protections
- Encrypted VPN for optional monitoring *(New)*
- Optional Virus Protection software subscriptions
- Segregated, secure gauging network isolated from plant network
- Hardware based Network Firewall option with automatic security profile upgrades *(New)*
- Investment Assurance™ program provides annual update options for all security features

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