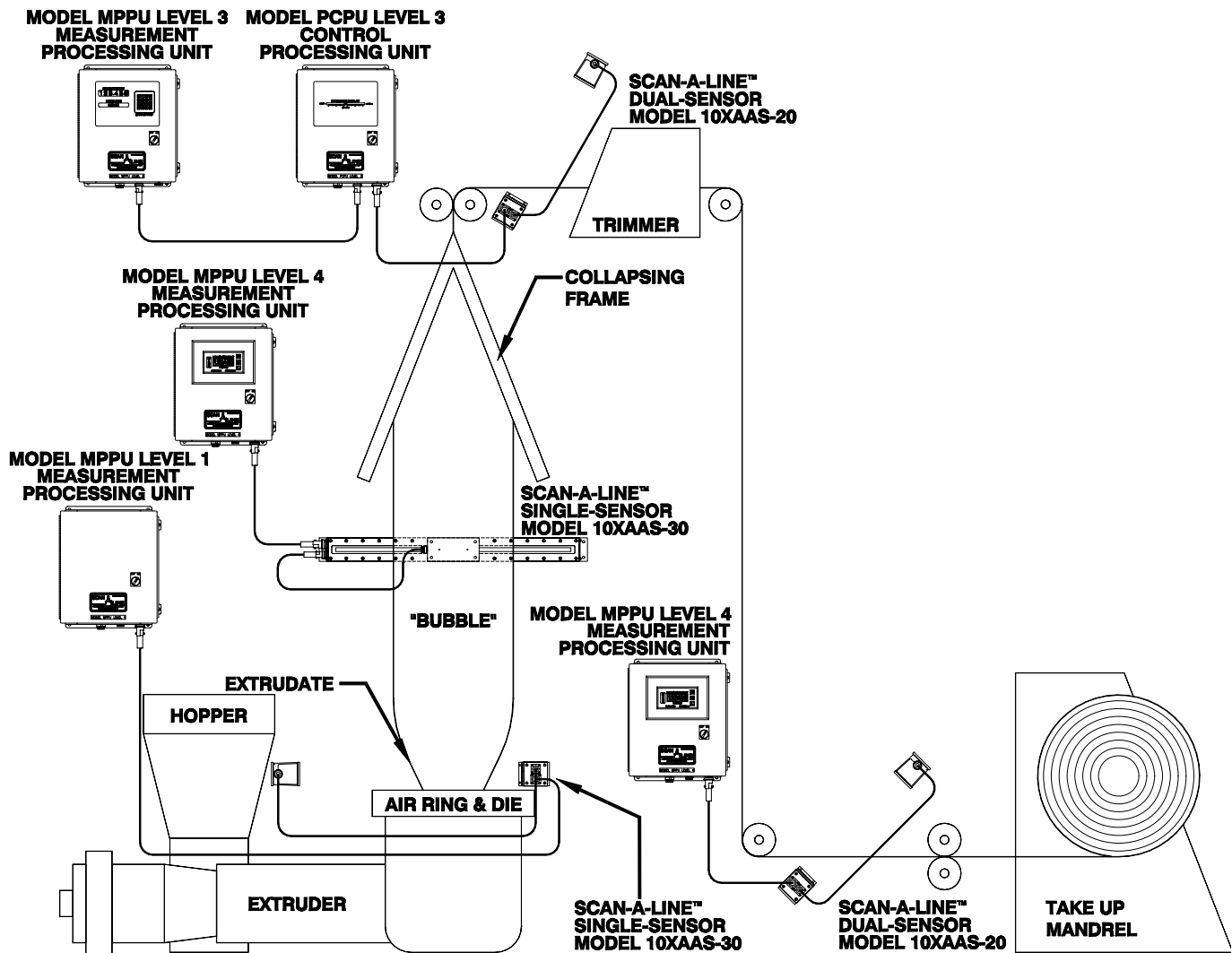


Blown Film Dimension & Position Monitoring



Problem

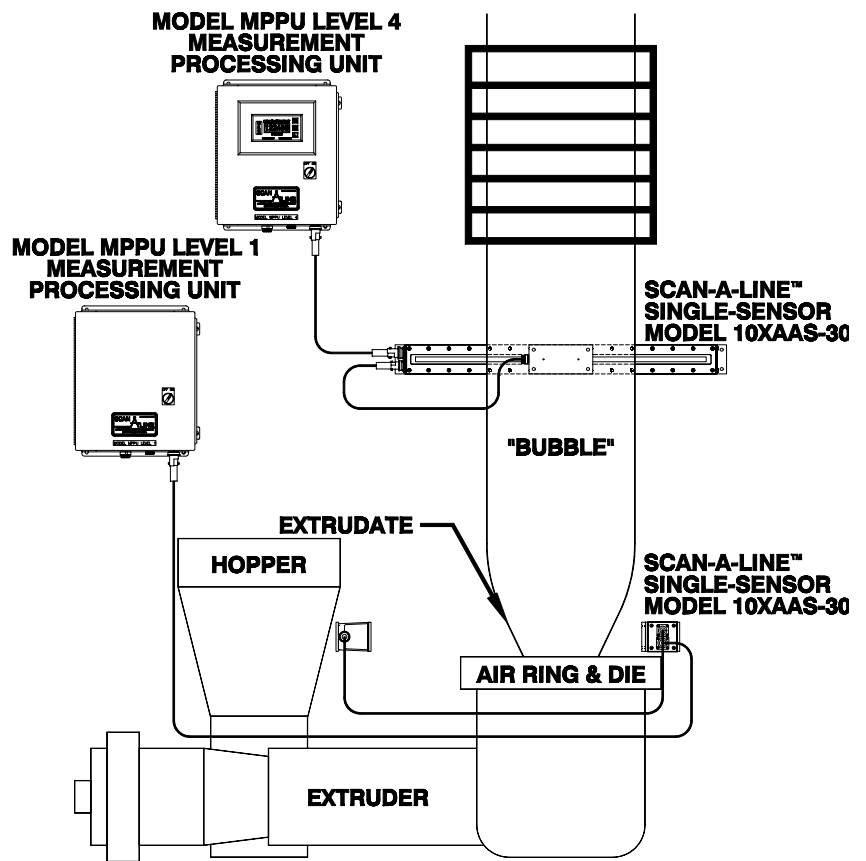
Manufacturers of blown film products face numerous obstacles when attempting to measure and position control their products. Transparent or translucent materials are difficult, at best, to detect. Varying densities and wall thickness' must be monitored closely so the finished product is the proper size. From the air ring and die {1}, through the collapsing frame to the edge trimmer {2} down to the rewind mandrel {3}, proper measurement and position of the material is critical to the production of an in-spec product with as little waste as possible. In addition to these challenges, the personnel responsible for the blown film product also face the need to document film measurements in order to meet traceability requirements of medical and food service film suppliers.

Blown Film Dimension & Position Monitoring

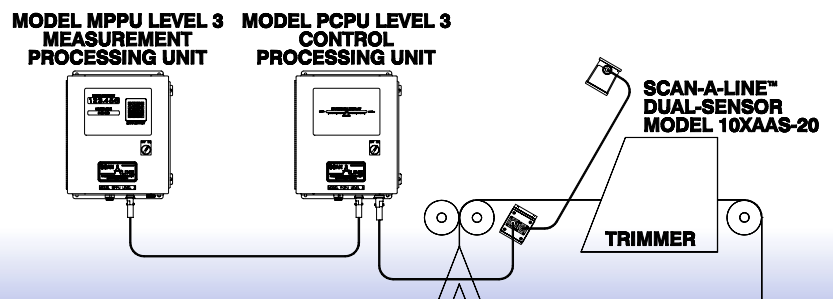
SCAN-A-LINE™ Solutions

Accurate and reliable measurement and position control of blown film on the process line allows for the production of in-specification, high-quality plastic film. Measuring the extrudate at the exit from the air ring simultaneously with the measurement of the expanded "bubble" provides data to an extruder controller to assist in the correction of the expansion rate. These corrections help yield a consistent film with the proper characteristics *before* it enters the collapsing frame. SCAN-A-LINE™ Measurement Systems using the unique Auto-Sync - 10XAS-Series Sensor with a versatile Multi-Purpose Processing Unit - Model MPPU Level 1 measures the extrudate as it leaves the air ring {1}. Another Measurement System with a single-sensor 10XAS-Series and a Model MPPU Level 4 measures the expanded extrudate farther up the "bubble". Altogether, this Extrudate Measurement System provides measurement data from both systems (either as an analog signal or as serial communications) that can be forwarded to the extruder controller and/or data collector to assist with extruder and die control.

After the collapsing frame, the width measurement of the laid-flat film may be required for proper trimming of the material, as well as position control at the entry of the trimmer. One of the unique features of the SCAN-A-LINE™ product line is the ability to use one set of sensors to supply data to multiple processing units in order to perform various tasks. With a pair of SCAN-A-LINE™ sensors detecting the edges of the laid-flat film, a SCAN-A-LINE™ PID Control Processing Unit - Model PCPU Level 3 uses the sensor outputs to generate a centerline analog signal for position control into the trimmer. The Model PCPU then passes the sensor outputs to a Model MPPU Level 3 {2}. The Model MPPU then performs a measurement of the material at the same point as the control action. With this Width & Position Monitoring System, both the centerline and measurement data can be sent to the trimmer controlling equipment, providing complete placement and dimensional control of the film trimming process.



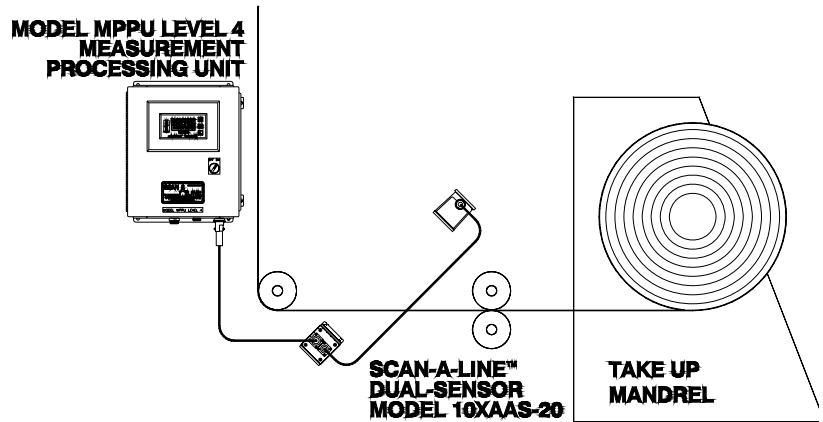
Scan-A-Line™ Extrudate Measurement System



Scan-A-Line™ Width & Position Monitoring system

Blown Film Dimension & Position Monitoring

Once the material has passed through the trimmer (or after the collapsing frame if there is no trimmer), a final width measurement may be made as part of the documentation of the characteristics of the roll. A pair of SCAN-A-LINE™ sensors is again teamed with a Model MPPU Level 4 to perform finished width measurement {3}. By adding the optional SPC Option to the Model MPPU, a statistical report may be generated as either a hard-copy printed report or serial communications. This report can be matched to the film roll as a tracking report describing the roll width, width deviation, and nominal length measurement as well as roll identification.



Scan-A-Line™ Final Width Measurement System

Extrudate Measurement System Components ①

- SCAN-A-LINE™ Auto-Sync Sensor – 10XAS-Series Single- or Dual-Sensor System (depending upon the diameter of the bubble)
- Multi-Purpose Processing Unit – Model MPPU
- LCD Touchscreen – Level 4, LED Display/Keypad – Level 3 or RS-232 Communication – Level 1 Customer Interfaces for Model MPPU
- Serial Communications Output
- Deviation and Absolute Analog Outputs
- Graphing Functions available on Model MPPU Level 4

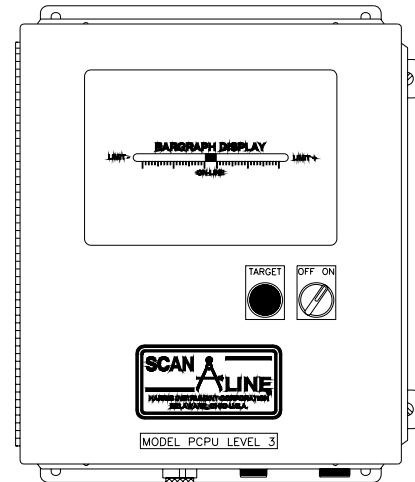


Measurement Processing Unit -
Model MPPU Level 4

Blown Film Dimension & Position Monitoring

Width & Position Monitoring System Components ②

- SCAN-A-LINE™ Auto-Sync Sensor – 10XAS-Series Dual-Sensor System
- Multi-Purpose Processing Unit – Model MPPU
- Proportional/Integral/Derivative (PID) Control Processing Unit – Model PCPU Level 3
- LCD Touchscreen – Level 4, LED Display/Keypad – Level 3 or RS-232 Communication – Level 1 Customer Interfaces for Model MPPU
- Serial Communications Output for all Model MPPUs
- Deviation and Absolute Analog Outputs on all Model MPPUs, Deviation Analog Output for Model PCPU
- Graphing Functions available on Model MPPU Level 4



PID Control Processing Unit -
Model PCPU Level 3

Final Width Measurement System Components ③

- SCAN-A-LINE™ Auto-Sync Sensor – 10XAS-Series Dual-Sensor System
- Multi-Purpose Processing Unit – Model MPPU
- LCD Touchscreen – Level 4, LED Display/Keypad – Level 3 or RS-232 Communication – Level 1 Customer Interfaces for Model MPPU
- Serial Communications Output
- Deviation and Absolute Measurement Analog Outputs
- Optional Centerline Analog Output
- Built-in Graphing Functions available on Model MPPU Level 4
- SPC Options for Statistical Reporting on Model MPPU Level 3 or Level 4



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