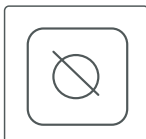


The NEXiS® CS3G-C diameter control system interfaces with all single or dual plane IntelliSENS™ DG Series laser diameter gauges. Designed for industrial use, the NEXiS® CS3G-C is a robust, powerful and very easy to use control system, with a 800 x 480 LCD display with touch screen. Standard features include: password protection, product presets, graphical FFT, graphical SPC, statistics, and flaw detection.

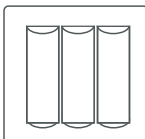


The NEXiS® CS3G-C has four relay outputs, 2 analogue outputs, as well as USB, RS232 and CANbus connectivity, facilitating integration into virtually any type of extrusion process. The easy-to-use interface allows operators to control product presets, independent tolerance settings, shrinkage setting, alarm functions line speed input, and a range of statistical data settings. The integrated controller is an auto-adaptive PID Controller. Multiple line control configurations, including diameter and wall thickness control using core, hot and cold diameter with automatic shrinkage, as well as simultaneous capacitance display.

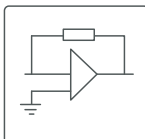
FEATURES



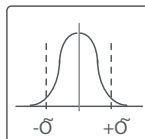
PRESETS



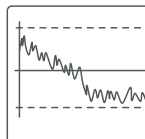
RECIPES



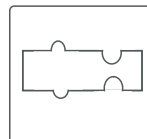
ACA



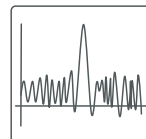
SPC



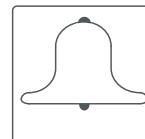
SPC CONTROL



LUMP & NECK



FFT ANALYSIS



ALARMS

TECHNOLOGY

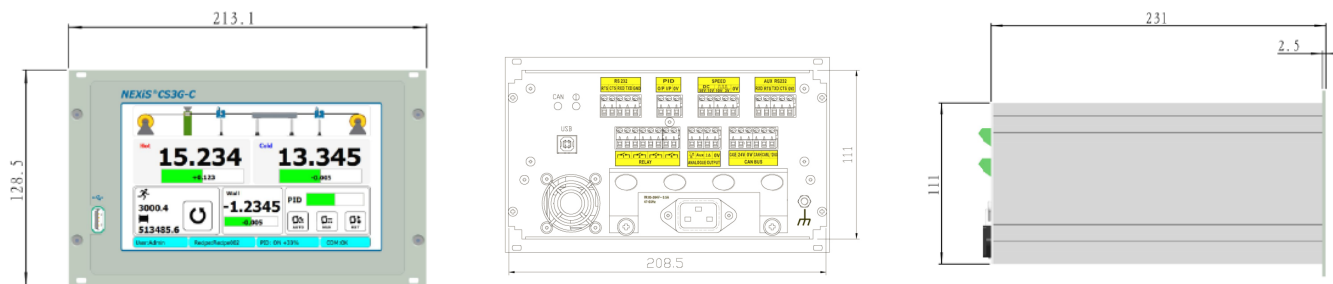
Advanced Control Algorithm

- Product Preset = P
- Estimated Core = C
- Actual Diameter = A
- Diameter Error $\varnothing \text{ error} = \frac{A^2 - C^2}{P^2 - C^2} - 1$
- Control Output is the amount of trim applied to the motor drive $Co = I_g \int_0^t \varnothing \text{ error} dt$

BENEFITS

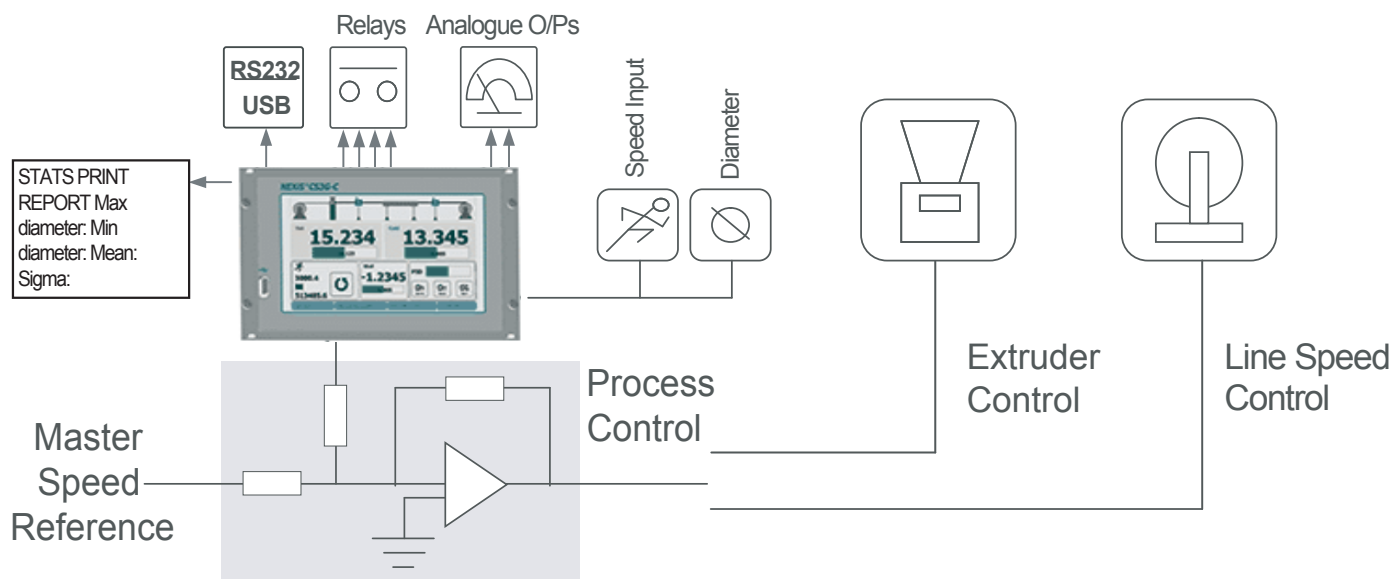
- Economical, User Friendly, Powerful Display and Control System
- Maintain Product Dimensions within Preset Specification Limits
- Alarm Functions Indicate Product Exceeding Specification
- 4 x Relay Outputs – Selectable from Multiple Parameters
- 2 x Analogue Outputs - Selectable from Multiple Parameters
- Graphically Displayed SPC, Flaw Detection and FFT Analysis
- Store Recipe Details in System Memory

NEXiS® CS3G-C : connected to PD/DG/DGK Diameter Gauge via CANbus



| | |
|-----------------------|---|
| Model | NEXiS® CS3G |
| Screen | Back-lit color 800x480 LCD display with resistive touch panel |
| Weight | 2.5 kg (5.5 lbs) |
| Power Supply | 85 - 264 VAC rms, 120 - 370 Vdc, 47 - 65 Hz, 1 A max (rms) @ 115 VAC, 35W max. |
| Operating Environment | Temperature: 0 – 45 °C (41 – 113 °F). Relative Humidity: 90% 38°C (105 °F). Degree of Protection: IP50 |
| Serial I/O | RS232 / USB, CANbus |
| Speed Input | Analogue Input or Pulse Input. Speed Input required when using control output or if DG gauge in HELIX mode. Analogue Speed Input: 0 – 50 Vdc; selectable; User-programmable to required diameter range. Pulse Speed Input: 0 – 30 Vdc; selectable. Max. frequency 250 kHz. |
| PID Control Output | 1 x Solid State Control Output: $\pm 10V$, 10 mA. Output resistance $<10 \Omega$. Resolution: 12 bits. |
| Relay Contacts | 4 x Volt Free Max Rating 50 Vdc, 30 VAC; Current rating 500 mA; ON resistance $<0.1 \Omega$ at 100 mA; OFF resistance >10 Mega-Ohms |
| Programmable Relays | Each relay programmable to one of 10 options: XY upper tolerance exceeded, XY lower tolerance exceeded, Gauge OK, SSFD, X upper tolerance exceeded, X lower tolerance exceeded, Y upper tolerance exceeded, Y lower tolerance exceeded, Ovality upper tolerance exceeded, Ovality lower tolerance exceeded. |
| 2x Analogue Outputs | 16-Bit 10 Vdc 2mA - Selectable $\emptyset X$ or $\emptyset XY$; 16-Bit 10 Vdc 2mA - $\emptyset Y$ or ± 10 Vdc Average Error User-programmable to required diameter range |
| ACA Control | Advanced Control Algorithm |
| SPC Control | SPC data is used to determine a reduction or increase in the Set Point |
| SPC | Graphical SPC - Displays Histogram, CP, CPk |
| FFT | Graphical FFT – Displays Frequency & Amplitude of Variation |
| SSFD | Single Scan Flaw Detection – Detects Lumps and Neckdowns |
| Presets | Nominal, +Tol, -Tol, +Flaw, -Flaw |
| Product Recipes | 50 sets of product presets (Product Recipes) can be stored in the CS3G |
| Printed stats report | memory. Optional extra: Max, Min diameter, Mean, Sigma |

CONTROL SYSTEM CONFIGURATION



NEXiS® CS3G-C : control system configurations

Diameter Control using Cold Diameter



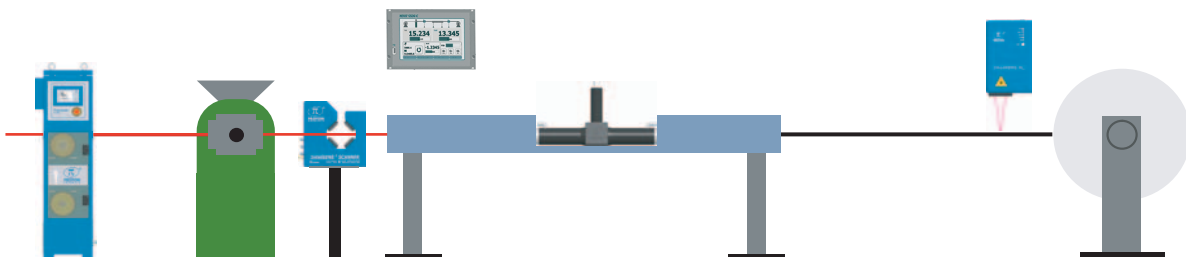
The CS3G-C processes data from D3, the diameter gauge positioned after the cooling trough, and transmits control signals to the extruder.

Diameter Control Using Hot Diameter and Shrinkage Offset



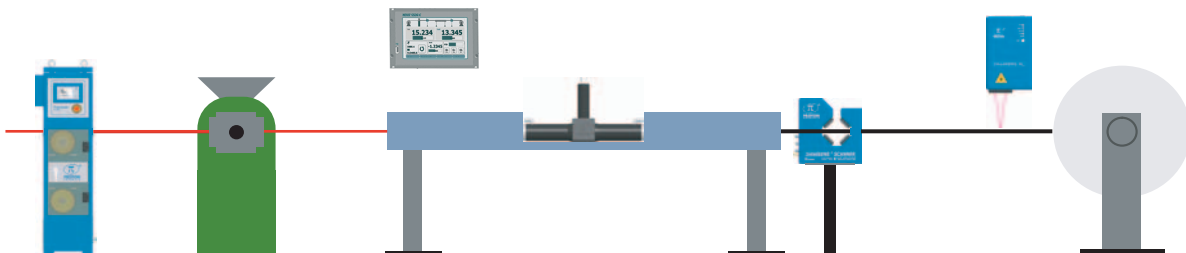
The CS3G-C processes data from D2, the DG Series diameter gauge positioned before the cooling trough, factors in a preset shrinkage value (in absolute or percentage terms) and transmits control signals to the extruder.

Hot Diameter Control with Capacitance Display



The CS3G-C processes data from D2, the DG Series diameter gauge positioned before the cooling trough, and transmits control signals to the extruder.
The CS3G-C simultaneously displays capacitance readings from the CG Series capacitance gauge.

Cold Diameter Control with Capacitance Display



The CS3G-C processes data from D3, the DG Series diameter gauge positioned after the cooling trough, and transmits control signals to the extruder.
The CS3G-C simultaneously displays capacitance readings from the CG Series capacitance gauge.

NEXiS® CS3G-C : control system configurations

Diameter Control using Hot and Cold Diameter with Automatic Shrinkage



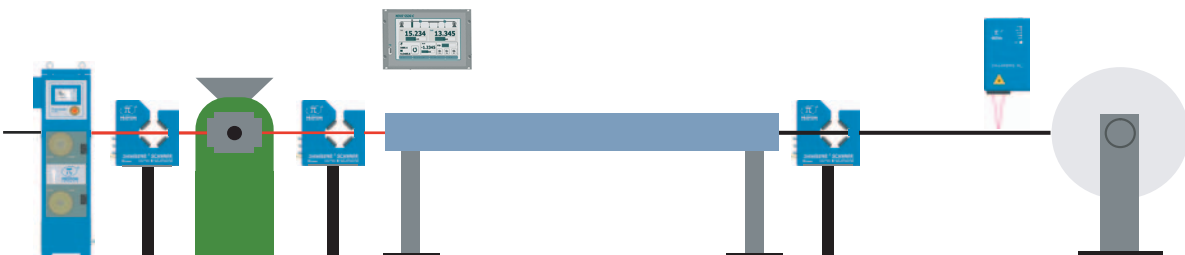
The CS3G-C processes data from the two DG Series diameter gauges, D2 positioned after the extruder, and D3 after the cooling trough, to monitor the shrinkage rate as the product passes through the cooling trough. The CS3G-C transmits control signals to the extruder, generated on the basis of calculations based on the D2 hot diameter value with the shrinkage value.

Wall Thickness Control using Core Diameter and Cold Diameter



The CS3G-C processes data from the two DG Series diameter gauges, D1 positioned before the extruder, and D2 after the extruder, to monitor the coating (wall) thickness. The CS3G-C transmits control signals to the extruder.

Wall Thickness Control using Core, Hot and Cold Diameter with Automatic Shrinkage



The CS3G-C system receives data from three PD/DG/DGK diameter gauges, D1 before the extruder, D2 after the extruder and D3 after the cooling trough. To achieve the required final (cold) wall thickness, the system factors the rate of shrinkage between D3 and D2, and the hot coating (wall) thickness (the difference between D2 and D1). The CS3G system transmits the resulting control data signals to the extruder.

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