



New Nonwoven Gauging Systems

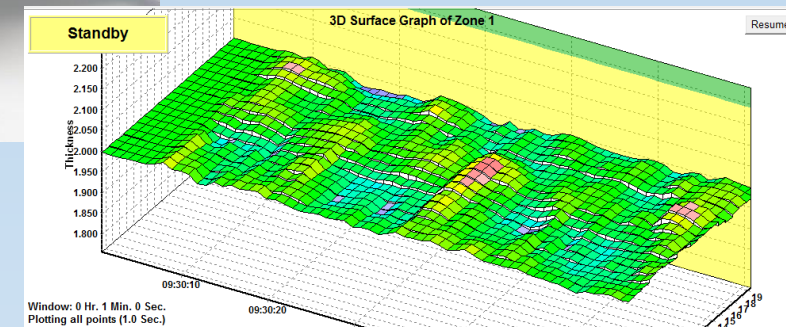
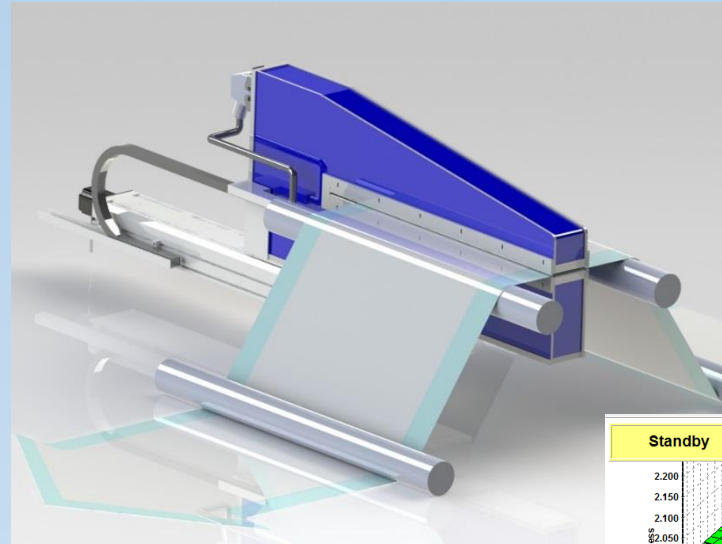
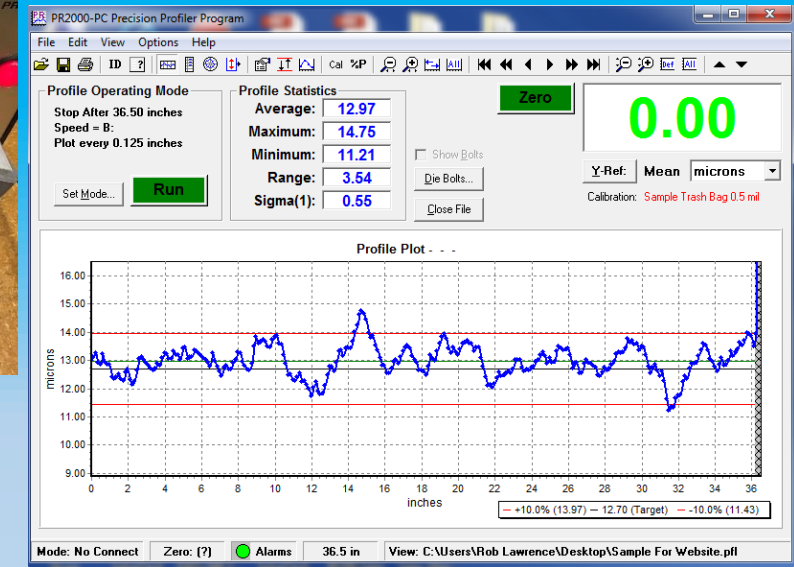
Rob Lawrence

SolveTech, Inc.

www.gauging.com

Agenda

- About SolveTech
- How It Works
- Off Line
- On Line
- Benefits
- Summary



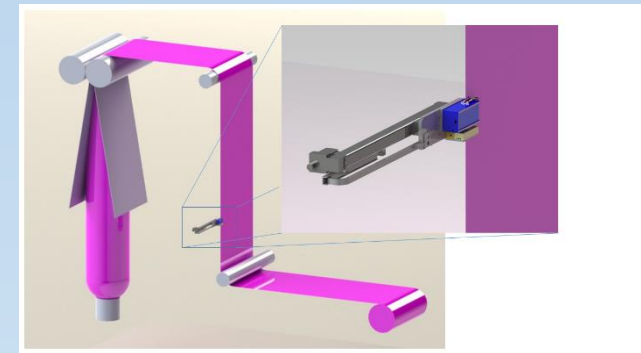
About SolveTech

- Founded in 1981 by Doug Lawrence
- Headquarters and Manufacturing in Wilmington, DE USA
- Focuses on capacitance gauging technology- On line and in the lab
- Very responsive to customers- attitude of service and providing value.
- Can custom engineer solutions



SolveTech Technology Can Measure:

- Thin Nonwoven Materials
 - Typically less than 0.25" thick.
 - Base Materials
 - Coatings/Adhesives on Nonwovens
 - Interface of nonwovens and other non-conductive materials.
- Additionally We Measure:
 - Wovens
 - Extruded Plastic Film
 - Ceramic Tape
 - Paper
 - Foam
 - Coatings
 - Any non-conductive material



Nonwoven Gauging

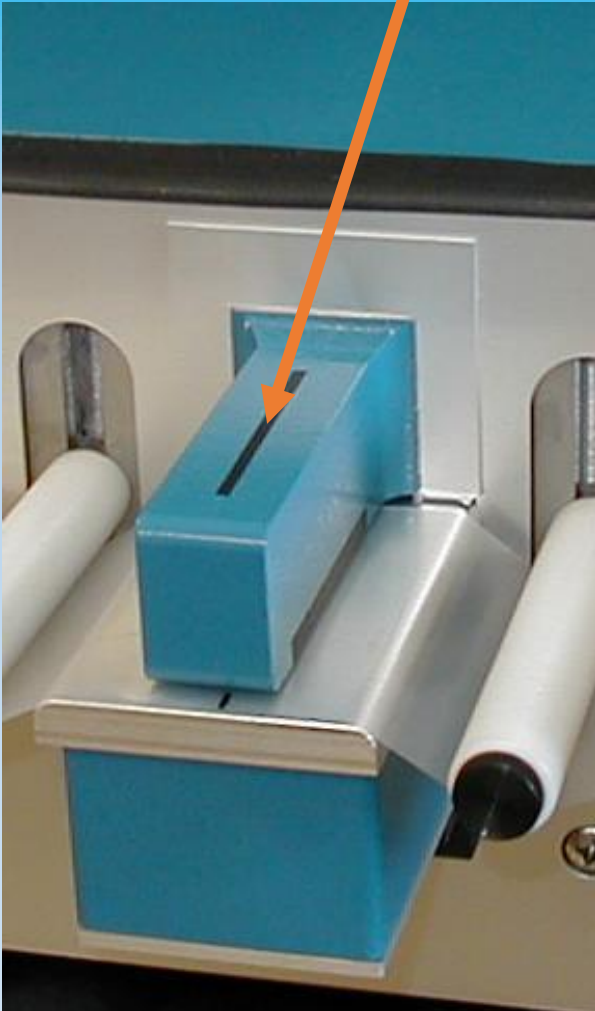
- Lab Use
 - Cut and weigh is a common method currently but it has limitations
 - PR2000 offers much higher resolution
 - Can be calibrated to read in g/m^2
- On Line
 - High response speeds possible- reading every 0.01 seconds
 - Customizable footprints averaging over a given area
 - Low noise in the reading because it averages over an area
 - On Line Cut and Weigh
 - Multiple Channels can be placed adjacent to each other
 - Great for measuring adhesive regions

Our Technology

- Capacitance Thickness Gauging Systems
 - Measures material thickness using an electric field without contact
- Proprietary Technology with Market Leading Performance
- No Nuclear Radiation or X-Rays = No Regulatory Headaches
- Customizable to Material Needs
- Industrially Durable
 - 25+ year life!
- Refined over 35 years of constant development

How It Works

Measurement Footprint



MEASUREMENT PRINCIPLE: GENERAL THEORY

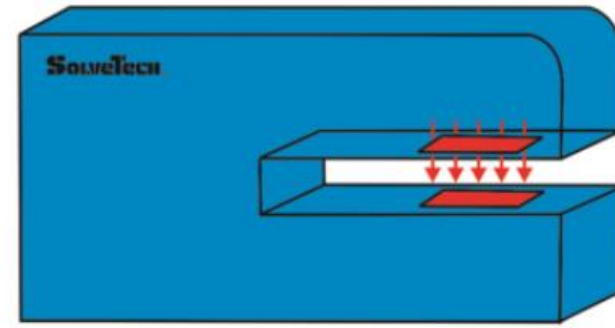


Figure 1

Simplified Measurement Head (Single Channel) showing an electric field between two measurement electrodes

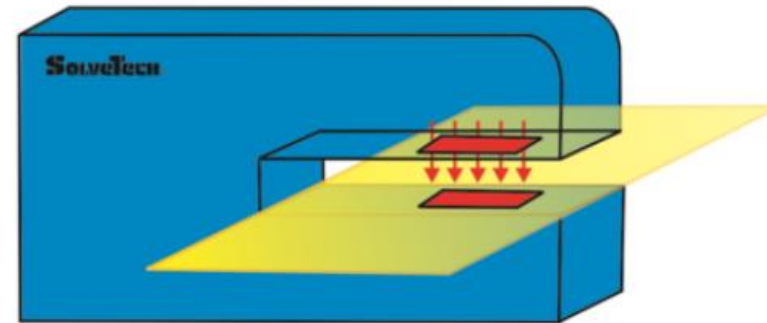


Figure 2

When a material is placed in the gap, it will respond to the electric field. The gauge contains a circuitry which is sensitive to this response.

How It Works

- The nonwoven material will cause a disturbance to the field which is read as a percentage.
- Air is tared out of the measurement so it is not a factor
- The gauge will sense the amount of material that is present in the field.
- Different materials/formulations may have a different response so the gauge is calibrated accordingly.
- Rectangular footprints are created, and the gauge averages the thickness over this entire footprint.
 - In the Lab : 0.125" by 2.25"
 - On Line: 1" x 2" typical
- These footprints can be calibrated so it is like doing a cut and weigh without having to cut and weigh

MEASUREMENT PRINCIPLE: GENERAL THEORY

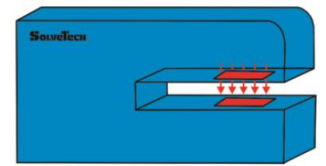


Figure 1
Simplified Measurement Head (Single Channel) showing an electric field between two measurement electrodes

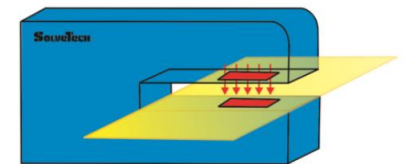


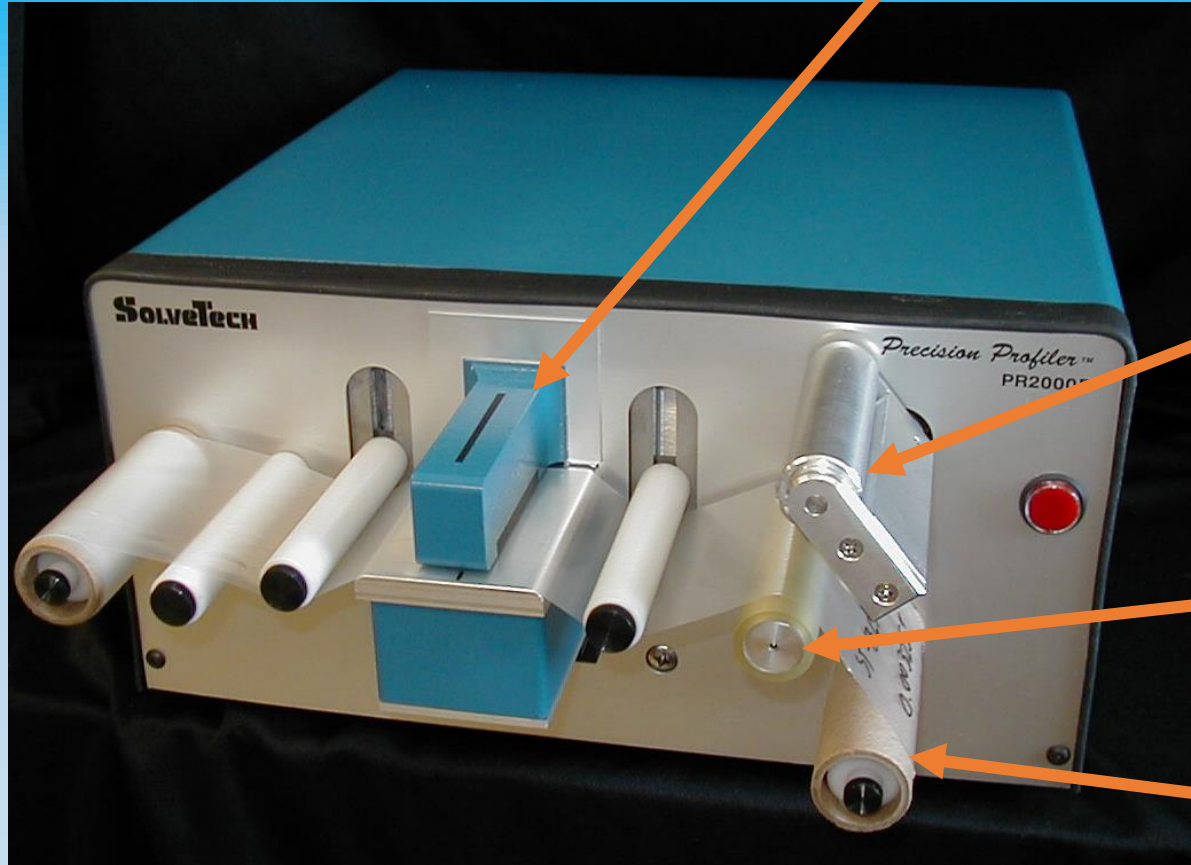
Figure 2
When a material is placed in the gap, it will respond to the electric field. The gauge contains a circuitry which is sensitive to this response.

Lab Gauge: The PR2000 Precision Profiler

- Delivers the thickness profile for a strip of material in the lab
 - Runs it through automatically while taking data
- The measurement head measures the material every 0.125"
- This allows the user to see a picture of the variability in the cross web direction
- Quickly takes data saving time/money
- Highly accurate, repeatable and stable.- Best on the market in all of these categories
- Great for a producer, converter or purchaser of material



The PR2000



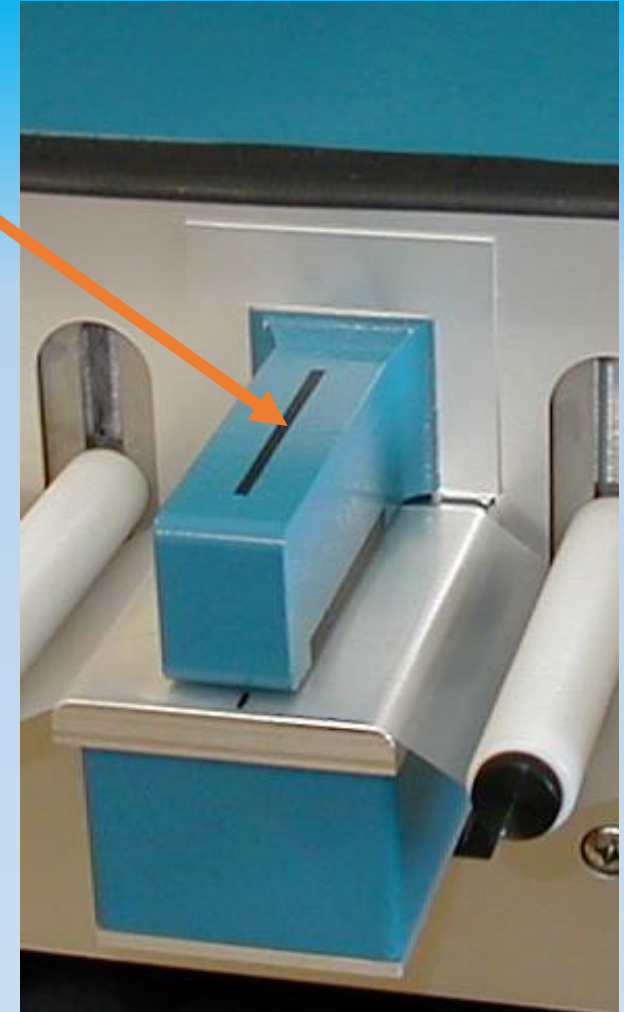
Measurement Head

Measurement Footprint

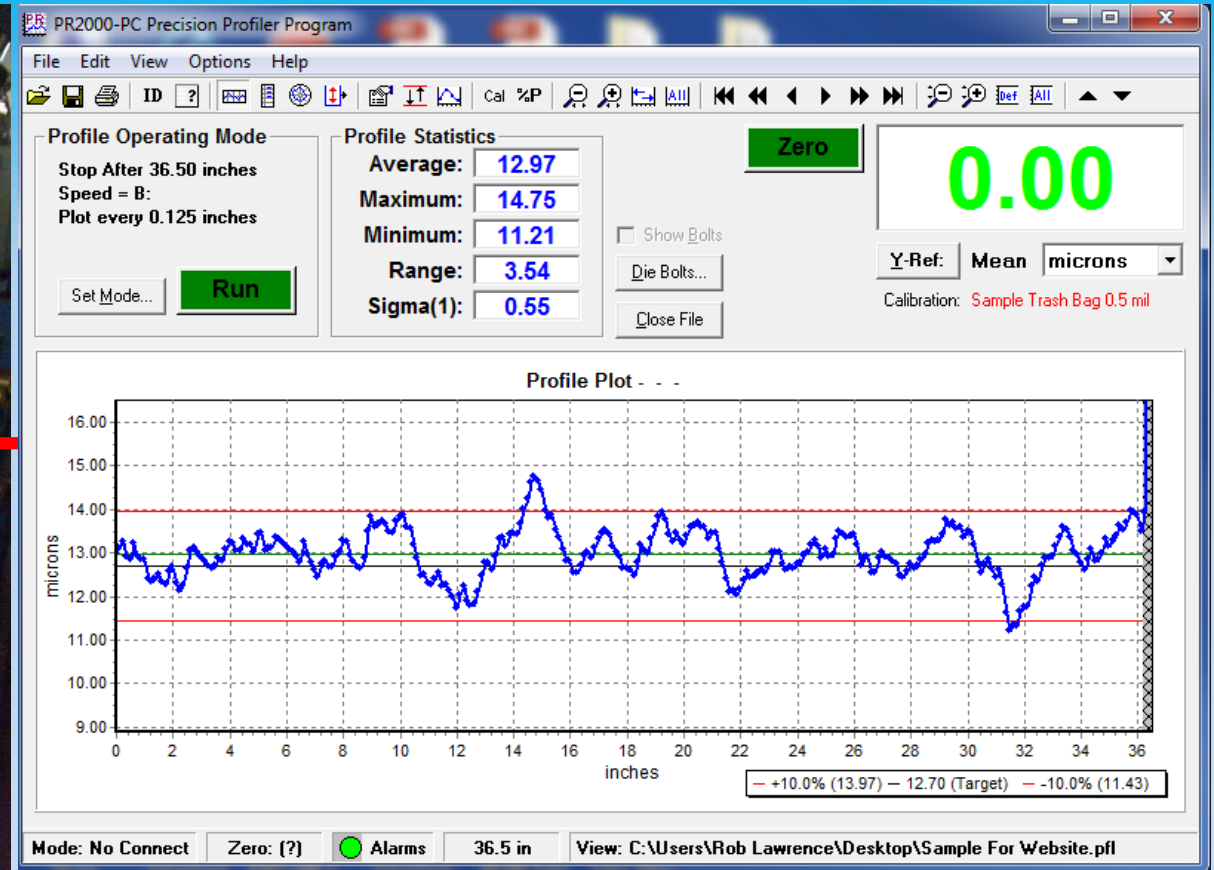
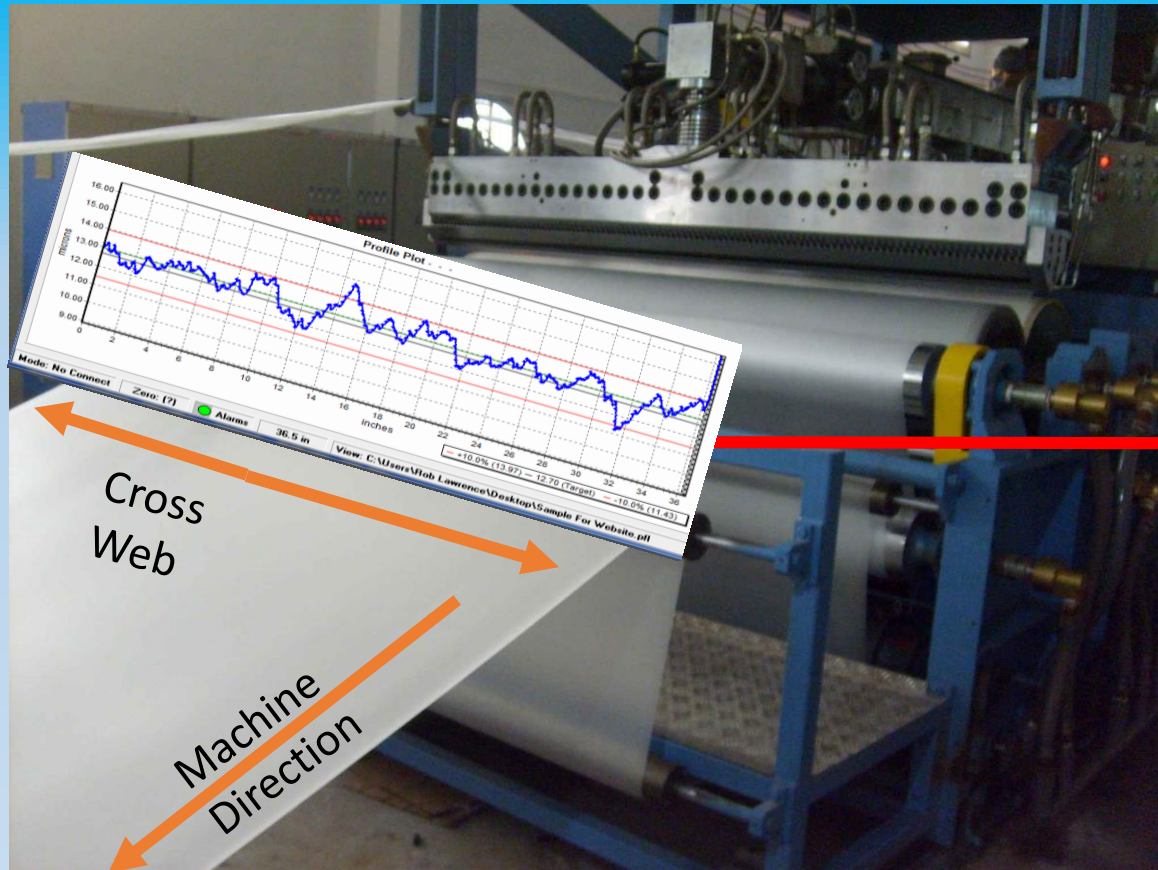
Nip Roller

Drive Roller

Material Spooling
(Optional)

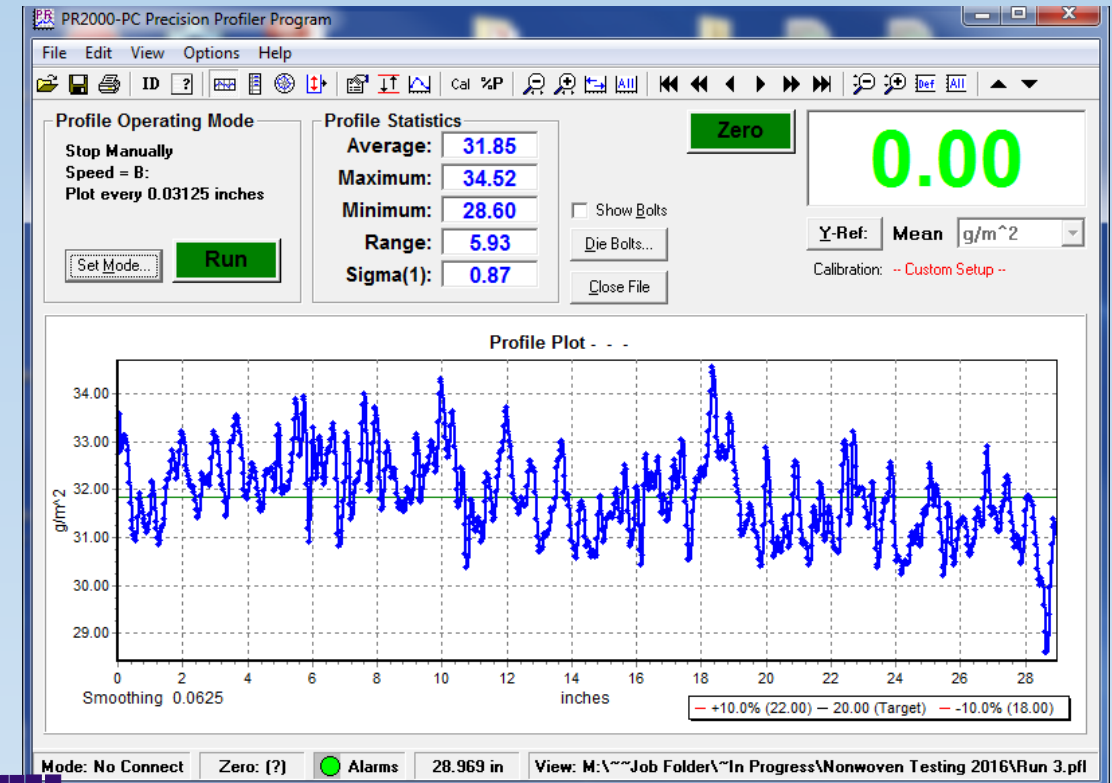
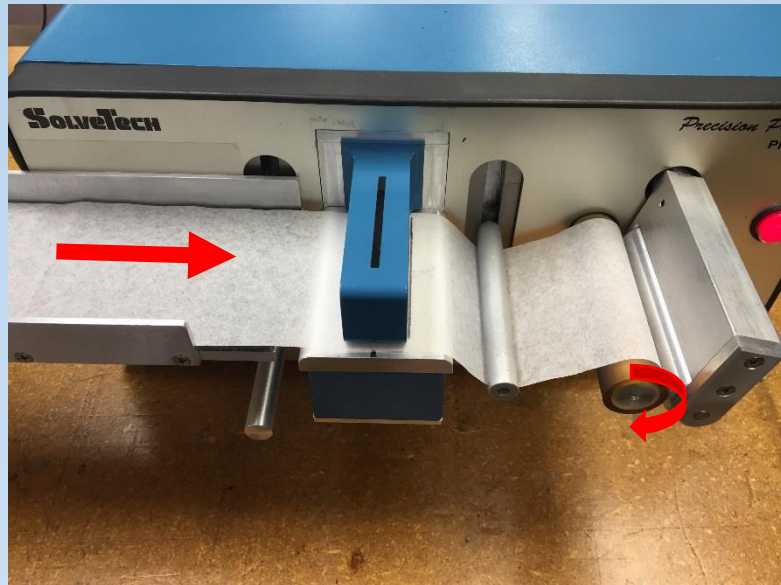
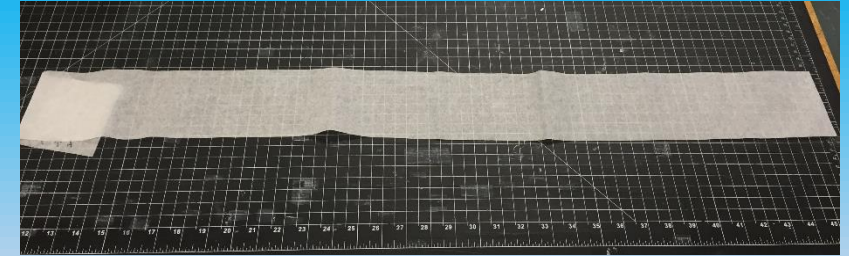


Cross Web vs Down Web Profiling



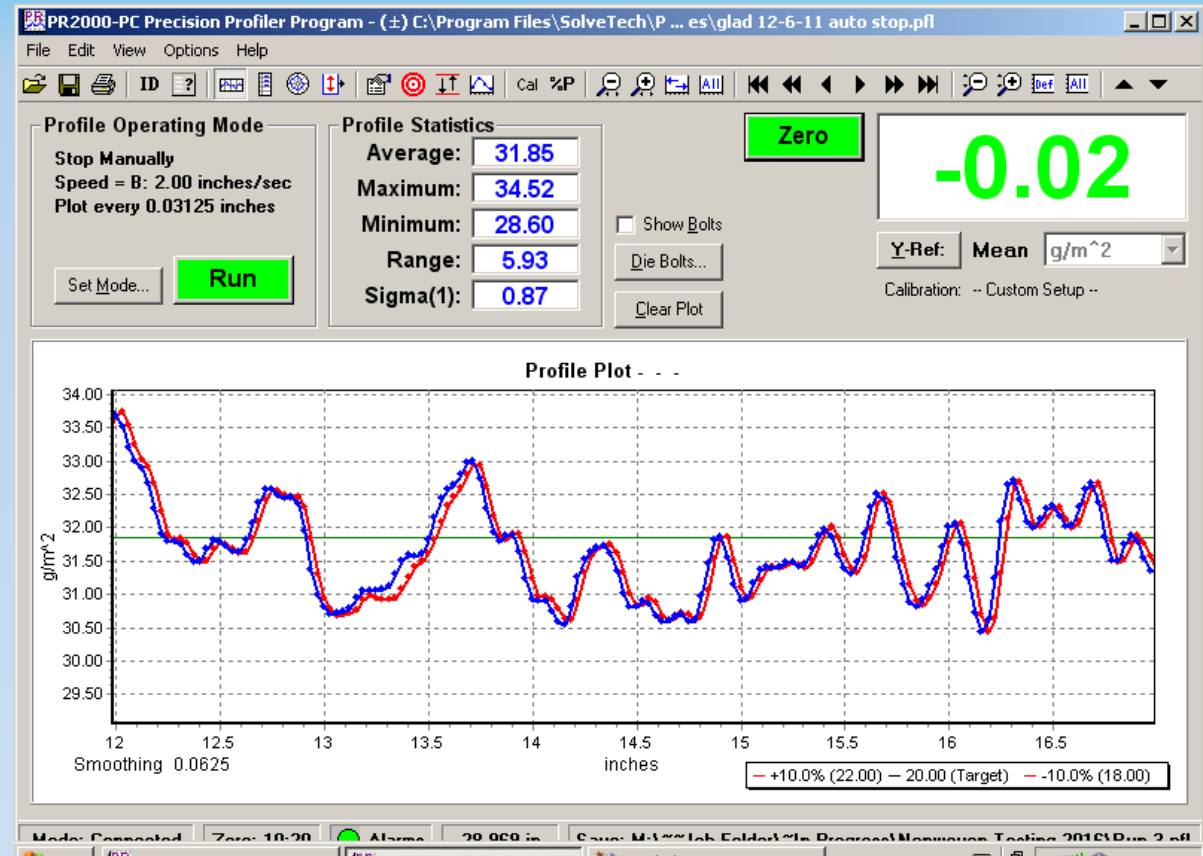
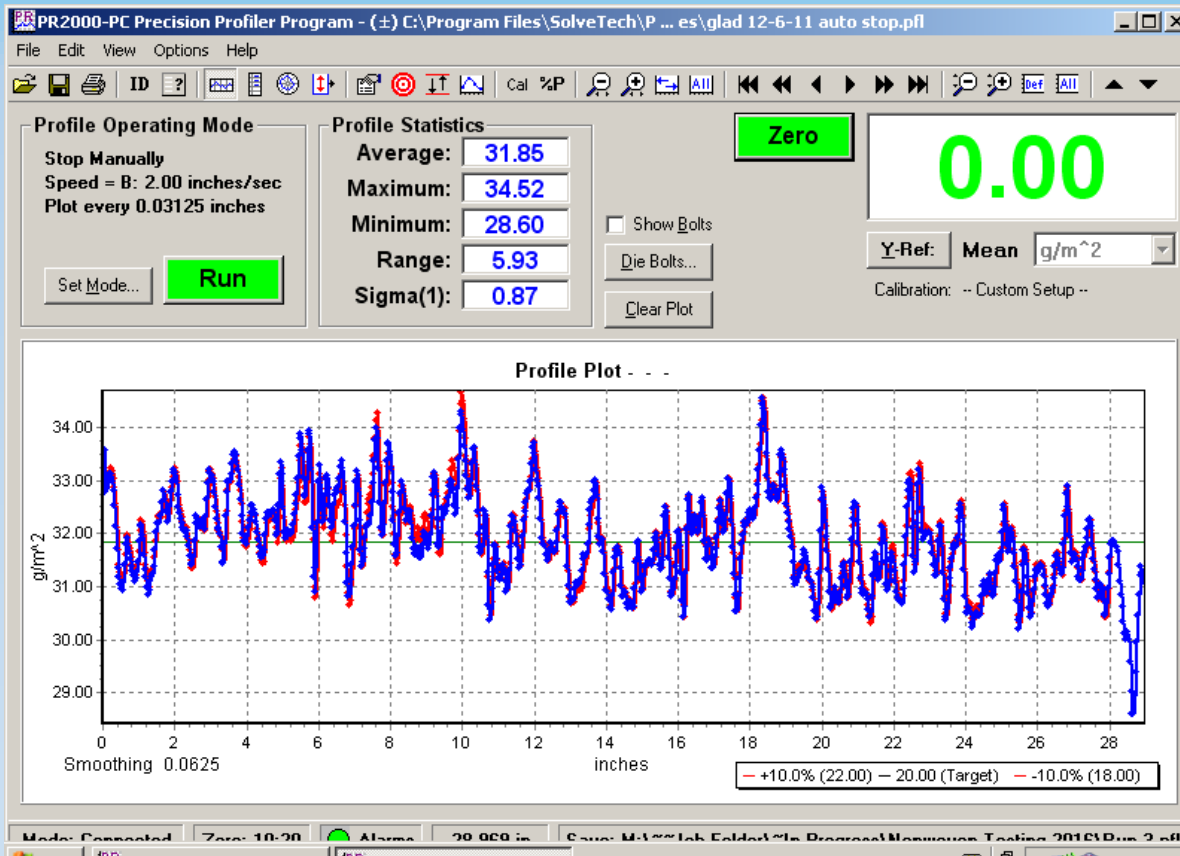
Example- Nonwoven Cross Web Profile

- A sample strip of material is cut: 3.4" wide, length can be anything.
- We then run the samples and produce the profile- takes ~30 seconds



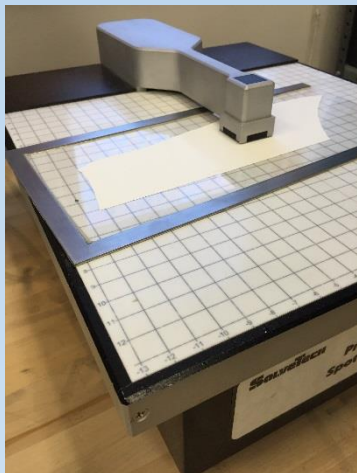
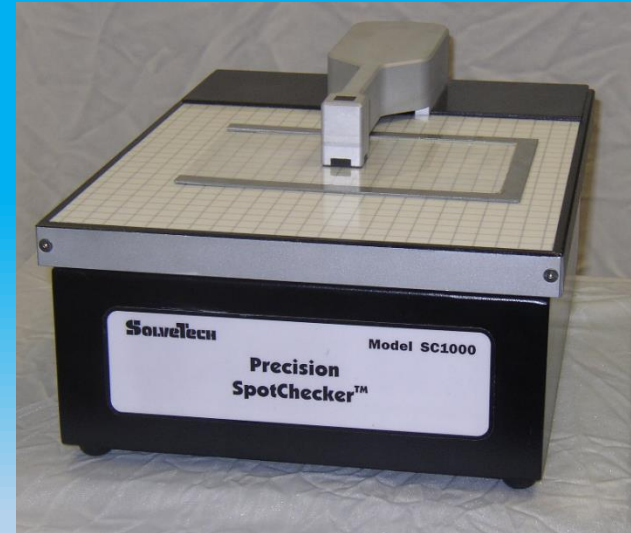
Test of Repeatability

- We overlay two consecutive runs to show how well the device repeats- Run 1 is Blue, Run 2 is Red

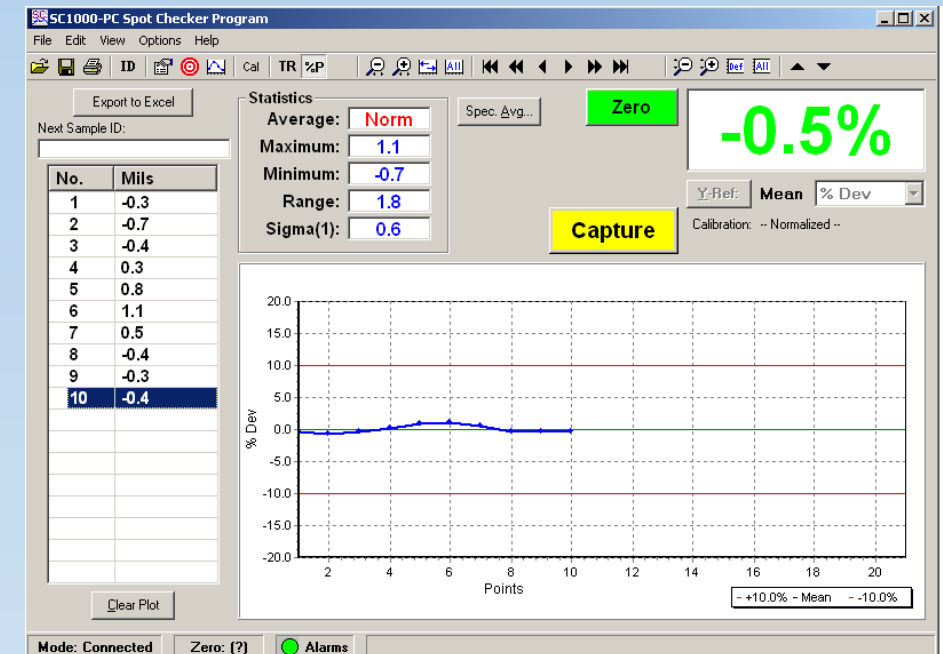
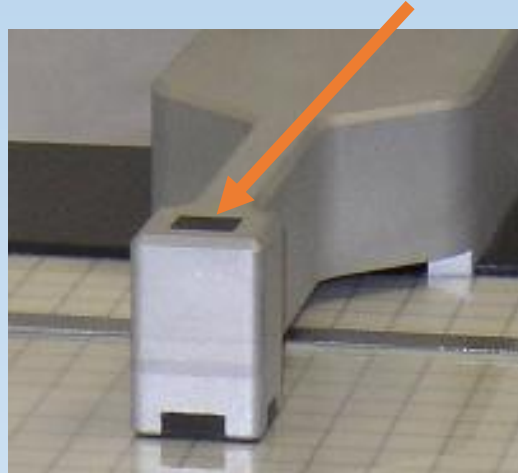


Inspect A Sheet SC1000 SpotChecker

- Measures a given spot under the measurement zone
- No need to cut the material into strips



Measurement Area (Customizable)

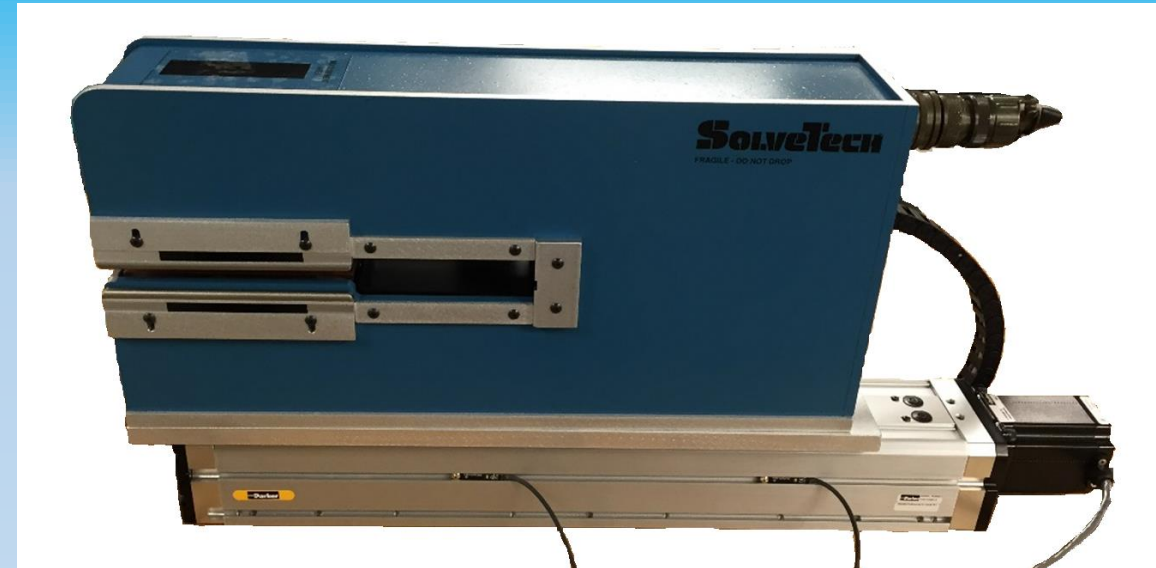


Software Records the Data Points

On Line Gauging

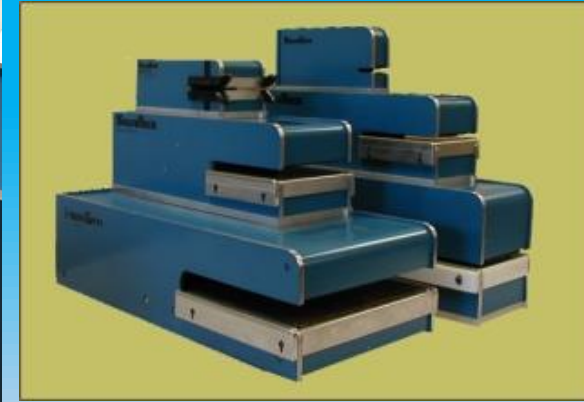
Options

- Single Channel
 - High speed basis weight feedback for a selected area
 - Customizable
- MultiChannel
 - Multiple channels for complete web coverage possible- Up to 60 inches wide
 - Can place channels in any location

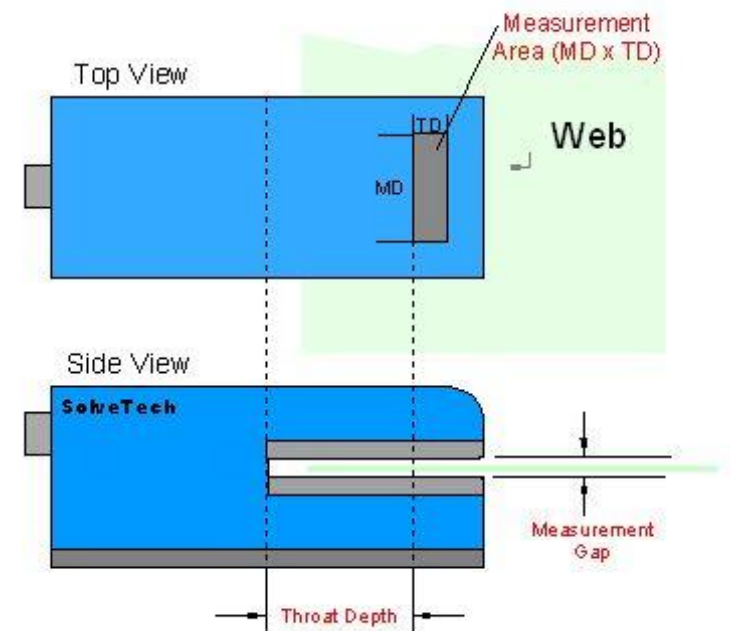


Uses For Single Channel

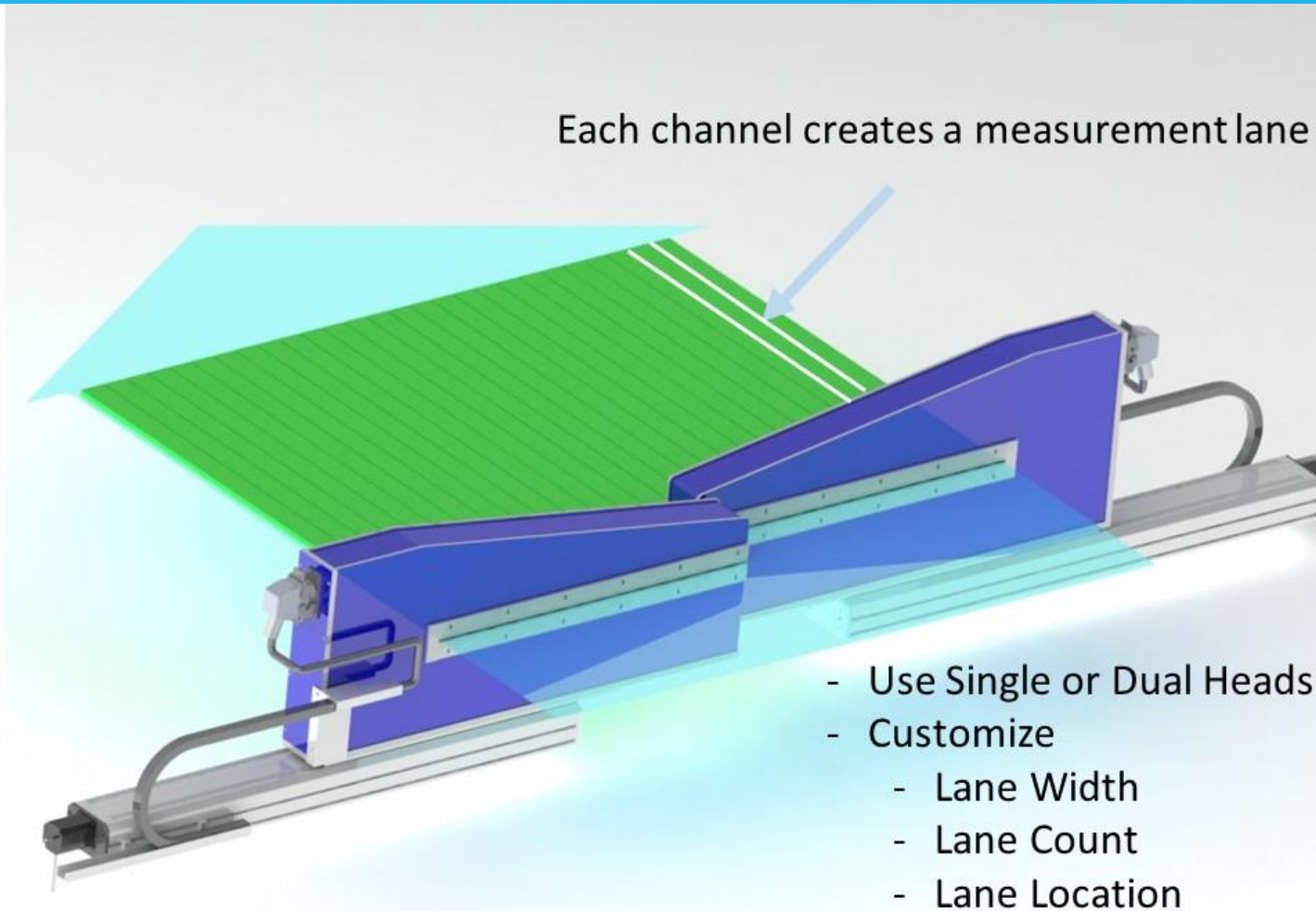
- An online check for process conditions
- Can be used for machine direction/down web data
- Helps to spot defects and provide traceability
- Great quality control tool
- Like having live cut and weigh on line



Measurement Head Geometry

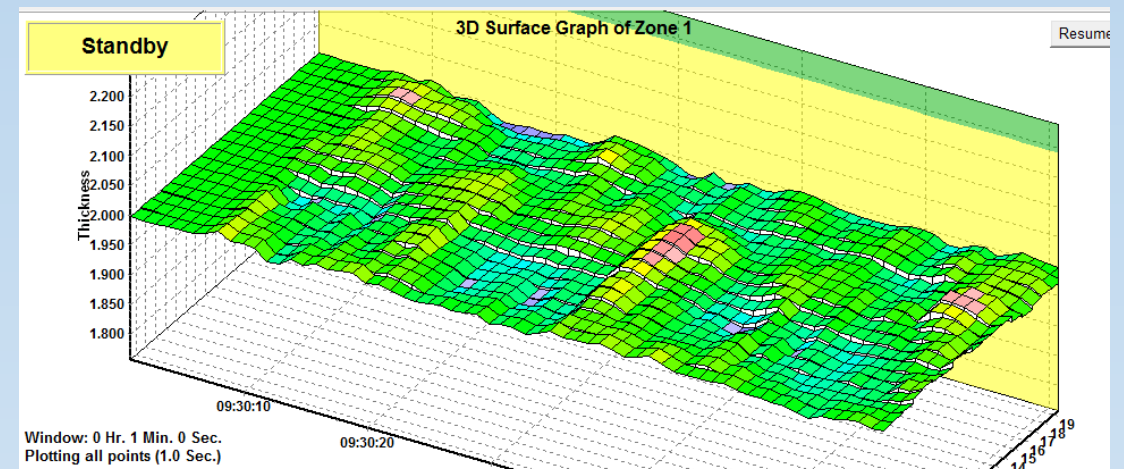
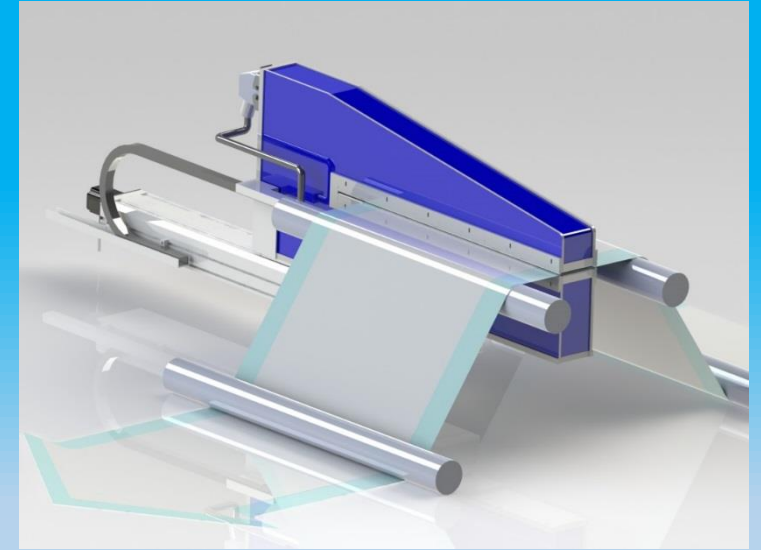


MultiChannel with Continuous Coverage

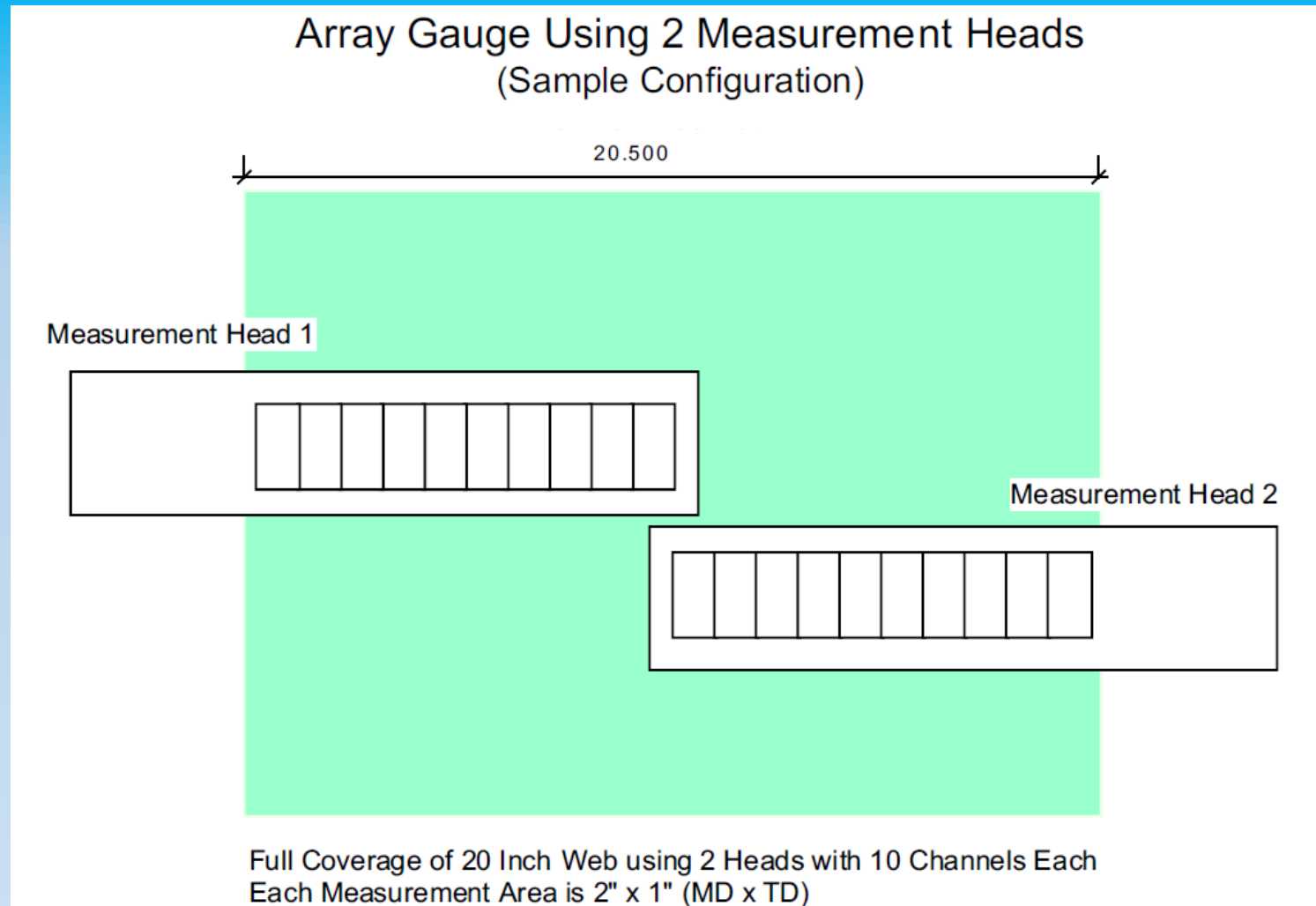


Uses for the MultiChannel

- Complete coverage possible to see the live cross web profile every second
- Adhesives/Coatings
 - Can place a channel in the adhesive zone and directly adjacent.
 - This allows you to subtract out the substrate directly adjacent to the coating

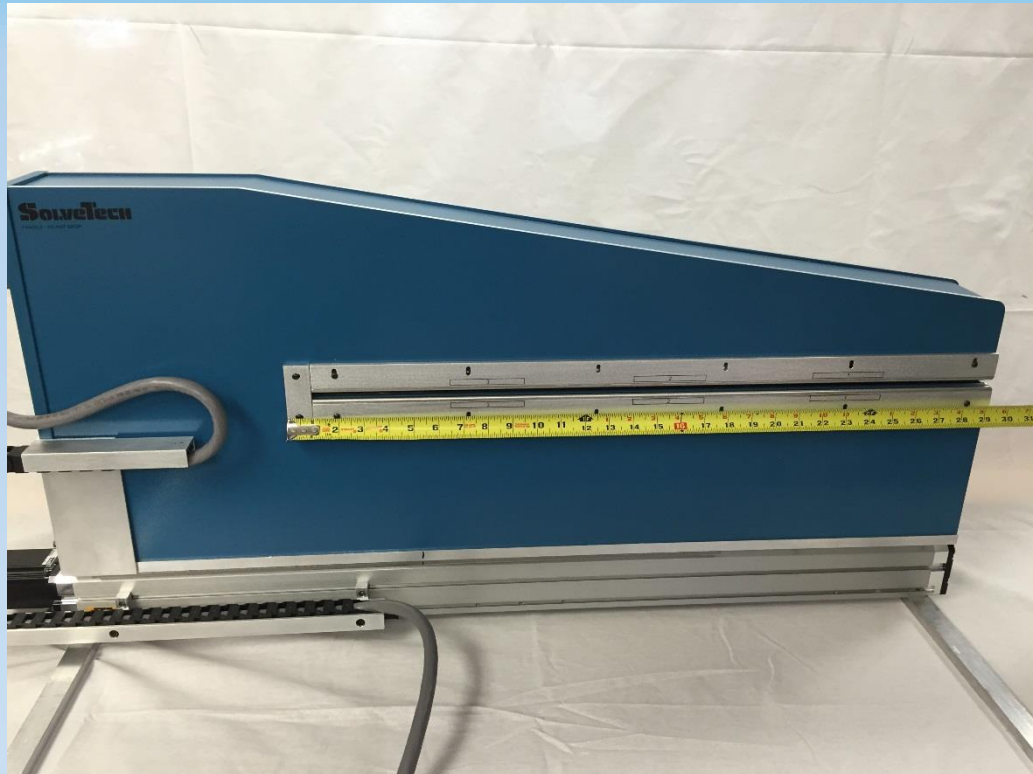


Example MultiChannel Layout

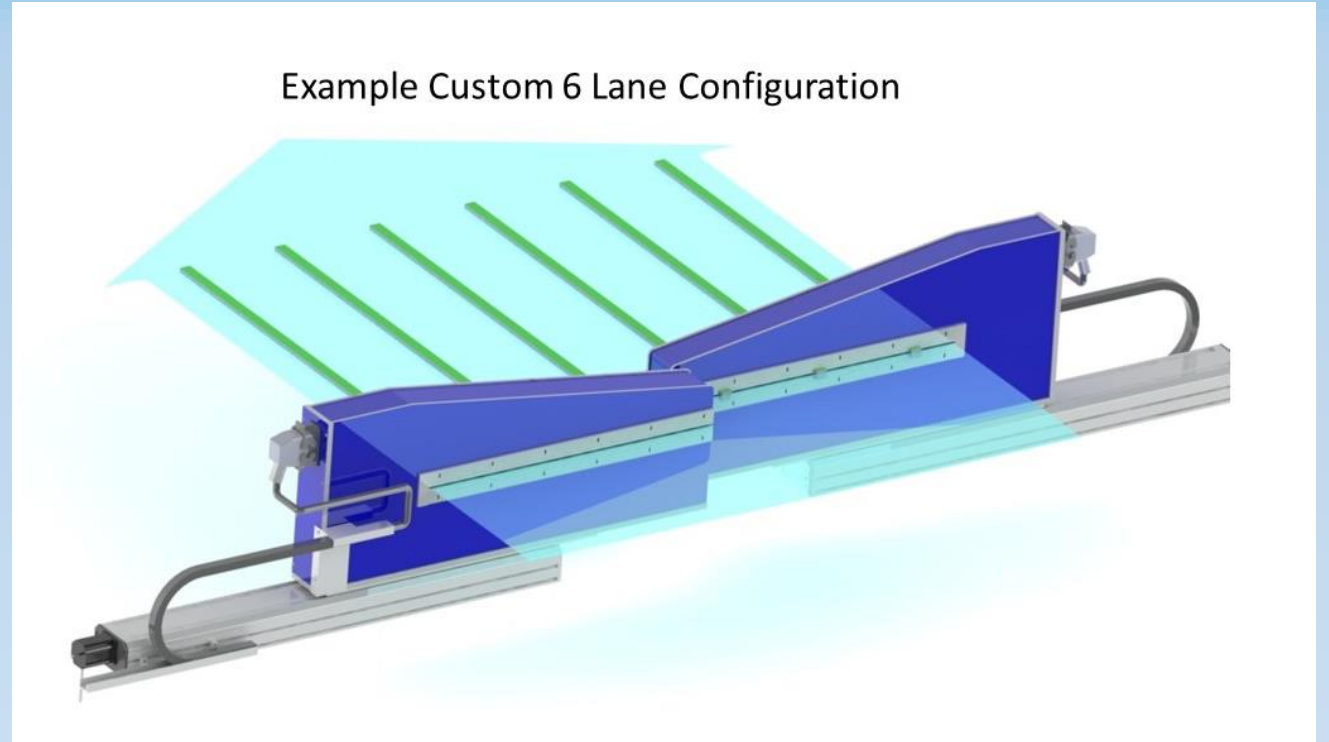


Example Configurations

MultiChannel with Two Heads with 3 Channels Each



Example Custom 6 Lane Configuration



Benefits for a Material Producer

- Visualize your process
- Reduce material usage through tighter control
- Verify average thickness and variability range before sending material to customers.
- Reduce waste by catching defects early
- Measuring helps improve quality and your brand
- See where to make adjustments-> Set up quickly
- Predict maintenance issues, reduce scrap and save time!

Benefits for a Material Purchaser/Converter

- Inspect the incoming product prior to processing
- Evaluate different suppliers
- Verify you are running the correct material
- Understand the product you are buying
- Huge time savings and better accuracy for incoming product inspection versus micrometers/cut and weigh
- Prevent or diagnose problems in the converting process

Summary

- SolveTech is introducing our technology to the nonwoven community after several successful installations
- It can be used by both producers, converters and purchasers of film
- High Performance, Green, and Customizable
- Great tool for quality control and production
- SolveTech will prove our technology to you through sample testing and trails.

Send us samples today for a free analysis!

Questions?

Thank you for your time!

Rob Lawrence

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