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The New PeenSolver Pro

THE PEENING WORLD needs curve solver programs to make determining intensity easier. Many people use Dr. Kirk's Saturation Curve Solver (SCS) Templates. The newly released Version 10 of Kirk's Solver added some great features but it didn't eliminate the need for Microsoft Excel. Since some people don't have Excel, or only have access to a mobile device, Electronics Inc. (EI) introduced the free-to-use webapp (PeenSolver.com) in 2017. The webapp is great for quickly determining intensity but doesn't have a lot of features and requires access to the internet. Enter the PeenSolver Pro (PSP) Windows 10 curve solver program. Using the powerful MATLAB® engine, it's a full-featured standalone curve solver program.

The experience of seeing many different process setups helped our team develop new exclusive features for the PeenSolver Pro. Process quality can be checked by calculating the percentage between actual arc height measurements and curve values. You can also select which equation the program uses to generate the curve, or let the program decide. Here's a full list of PeenSolver Pro's features.

Conventional Curve Solving
- Provides process intensity and saturation time per SAE J443
- Compliant to SAE J2597 for computer-generated saturation curves
- Selectable 2 or 3 exponent calculations – **Exclusive PSP Feature**
  PSP will automatically choose between the 2 or 3 exponent equations to generate the curve depending on the number of data points, or the user can select which one to use.
- Timed or feed-rate test strip exposure
  Test strip exposure time can be in seconds, minutes, passes, strokes, or feed rate. Feed rates are becoming more common with robotic motion control in shot peening cabinets.
- Pre-bow compensation
  Test strip pre-bow may be subtracted for more accuracy.

Type-2 Curve Detection
PSP will notify the user if a Type-2 curve is detected and provide the correct intensity value per SAE J443.

Error Checking
- Invalid curve detection
  The user will be notified if the longest peening time input is shorter than the solved 2T value, thus being an invalid curve/solution.
- Process quality detection – **Exclusive PSP Feature**
  PSP will compare each data point's arc height to the generated curve's arc height. The user is warned if percentage of error exceeds a configurable limit.

Intensity Verification
- Target arc height support
  The user can input a verification exposure time other than the solved saturation time. The PSP will provide the target arc height for the user's time.
- Stored with process file
  Process verification arc height values are logged in a file that can be re-loaded into the program.

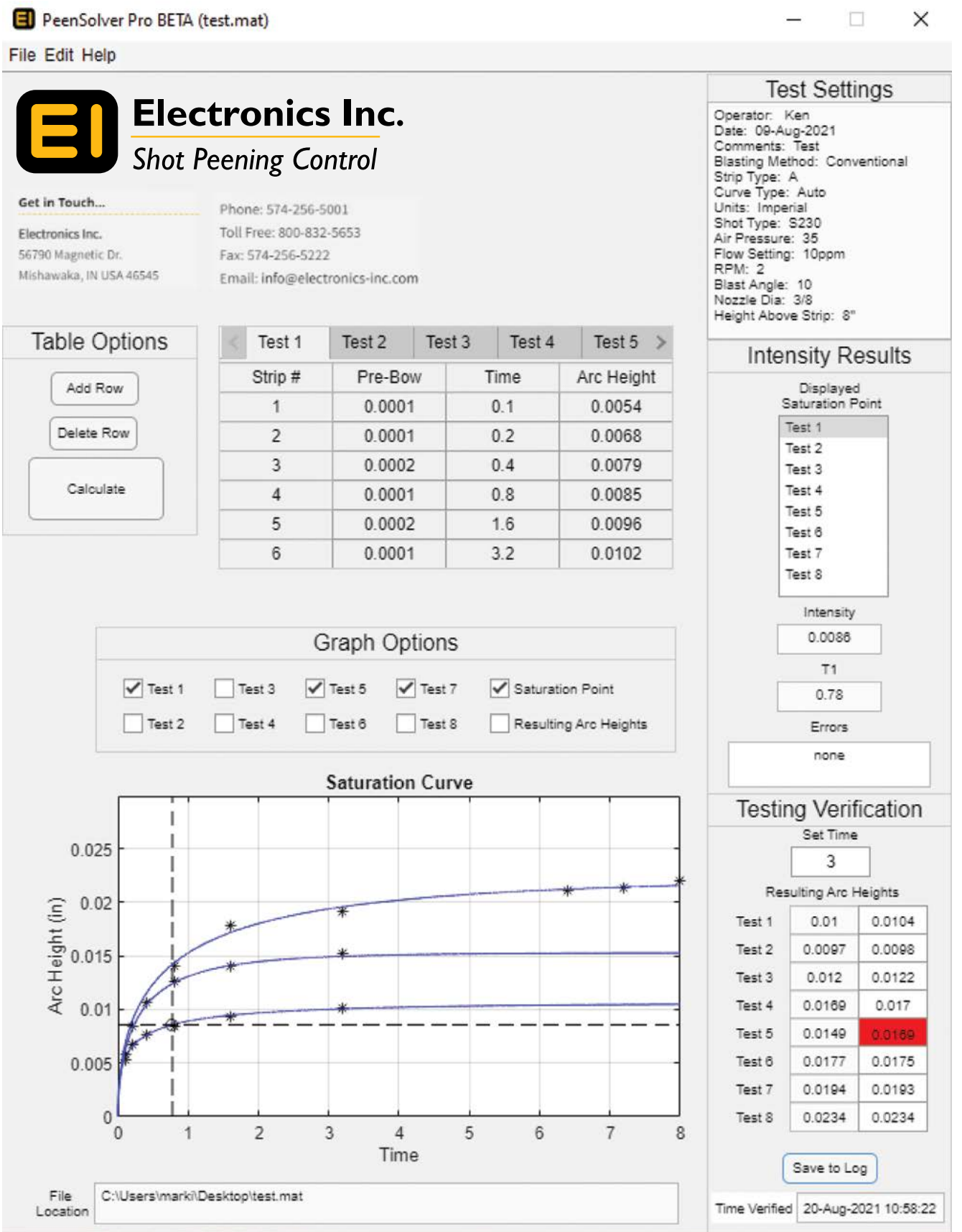
Superimposed Curves for Multiple Test Strip Locations
Multiple saturation curves can be displayed with individual verification arc heights based on a single exposure time.

Process Parameter Documentation – Exclusive PSP Feature
Each part process can have a stored file that may be re-opened when the part is run again. Verification values are logged in a continually updated file. The logged data can be cleared if parameters are changed then the file saved as a new process.
- Part name
- Part number
- Machine number
- Solved intensity and saturation time (multiple locations)
- Air pressure or wheel speed
- Nozzle distance
- Impingement angle
- Nozzle details

Rotary Flap Peening Arc Height Conversion
The PSP supports magnetic arc height adjustment.
- SAE 2590(3M), Boeing or Airbus conversion support

Additional Features
- Windows OS Based
  Designed and tested with Windows 10
- Testing Verification integrated into the same screen as intensity calculations, keeping curving solving and testing verification on one print out
- Graphs can be zoomed in and out and rescaled
- Ability to individually chose which graphs are displayed
- Vertical orientation
- File location on printout

PeenSolver Pro is currently undergoing beta testing and is expected to have been released by the time you read this. Visit www.electronics-inc.com for more information. ***Screenshot on page 22.***



The new PeenSolver Pro is packed with features.