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PTC Product Focus

Pro/ENGINEER Wildfire 5.0 Spark Analysis Extension

The First automated clearance and creepage solution. Pro/ENGINEER Wildfire 5.0 Spark Analysis Extension (SAX) solves this problem by providing the first automated solution for clearance and creepage analysis.

Clearance and creepage analysis is all about ensuring that sufficient insulation is provided so that electrical current will not jump between two conductive parts, potentially causing injury or damage. More specifically, clearance analysis identifies the shortest path between two conductive parts or between a conductive part and the outer surface of an enclosure when the distance is measured through air. Creepage analysis identifies the shortest path along the surface of the insulation.

Clearance and creepage errors are commonly discovered by product safety engineers. But undetected clearance and creepage problems can result in product recalls and warranty expenses. At worst they could lead to injury with resulting litigation and damage to your company's reputation.

You can now add a Comparative Tracking Index (CTI) value to each component to determine whether or not it is conductive.

The next step is to create a spreadsheet which defines all the nets in the design as well as the minimum distance required to provide a suitable functional insulation. You can determine the voltage involved, and the pollution degree, look up the minimum clearance and creepage distances in the standard and enter them into the spreadsheet. This approach determines the clearance and creepage requirements with far more accuracy than the rule of thumb methods used in the past. The result is that safety margins can be improved, reducing manufacturing costs and product size and weight.

You can select whether creepage or clearance analysis or both will be performed and also which nets, components or quilts will be analyzed. If you are focusing on a particular electrical problem, for example, you can analyze just the two components involved in a very short period of time.

Graphics aid in problem diagnosis.

The software automatically measures the clearance and/or creepage for each selected net and compares the actual distances against the minimum distances that are entered into the spreadsheet. When the analysis is complete the violations are displayed for further investigation. You can select a violation and the path is displayed in a graphic window to help understand the failure. The software also provides the safety value for each net, quilt or component that has been analyzed. The analysis results are stored with the assembly for later design reviews.

You may also override the results and ignore the violation. When a violation is overridden, the name of the user that overrode the violation and note explaining the reason is stored in the assembly. For example, the note may explain that a user has decided to add a plastic cap over the offending part.

Pro/ENGINEER also automates the process of incorporating manufacturing variation into clearance and creepage analysis. Clearance and creepage analysis can quickly be performed at maximum, minimum and nominal tolerances. When examining the impact of variation of particular components, you can set each component at any desired tolerance level.

Pro/ENGINEER Wildfire 5.0 Spark Analysis Extension automates the analysis of 3D electromechanical assemblies for clearance and creepage analysis, making it possible to fully investigate designs with much higher levels of accuracy. This new method makes it possible to deliver safer products to market in less time and at a lower cost than was possible in the past.

Key Benefits

- Automates electrical clearance and creepage analysis directly on the digital model
- Clearly identifies product safety issues
- Improves design quality by helping optimize designs for electrical product safety
- Saves time and reduces prototype costs
- Reduces production rework and scrap

Capabilities

- Provides easy model setup
- Defines the minimum distances required to provide proper insulation
- Verifies that measured distances comply with clearance and creepage files for nets (a group of conductive components and/or quilts), components, and assembly quilts

Model Setup

- Quickly define the conductivity of components by adding the Comparative Tracking Index (CTI) parameter to parts
- Temporarily colorize components and quilts based on the CTI to enable fast visual feedback
- Use Microsoft® Excel® to define nets and associated clearances

Flexible Analysis

- Define the minimum distances required to ensure product safety
- Define the groove width for short-circuit path calculation
- Analyze and verify clearance and creepage distances between quilts, components, or nets

Analysis Results

- Easily investigate violations in the results window; when a violation is selected, the path will be displayed in the graphics window to help the user better understand the failure
- Quickly determine whether a net has been analyzed, passed, or failed, or whether a failure has been overridden, by viewing the status of all nets listed in the results window
- Gain greater insight into design decisions; results that have been overridden automatically save the user name in the assembly, along with information that describes why the violation was overridden
- Save analysis results with the top-level assembly for design reviews

For more details about creating Pro/ENGINEER Wildfire 5.0 Spark Analysis Extension, please visit the Product area of ptc.com or contact your PTC Account Manager.

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PTC Product Focus

Smart Assemblies for Windchill

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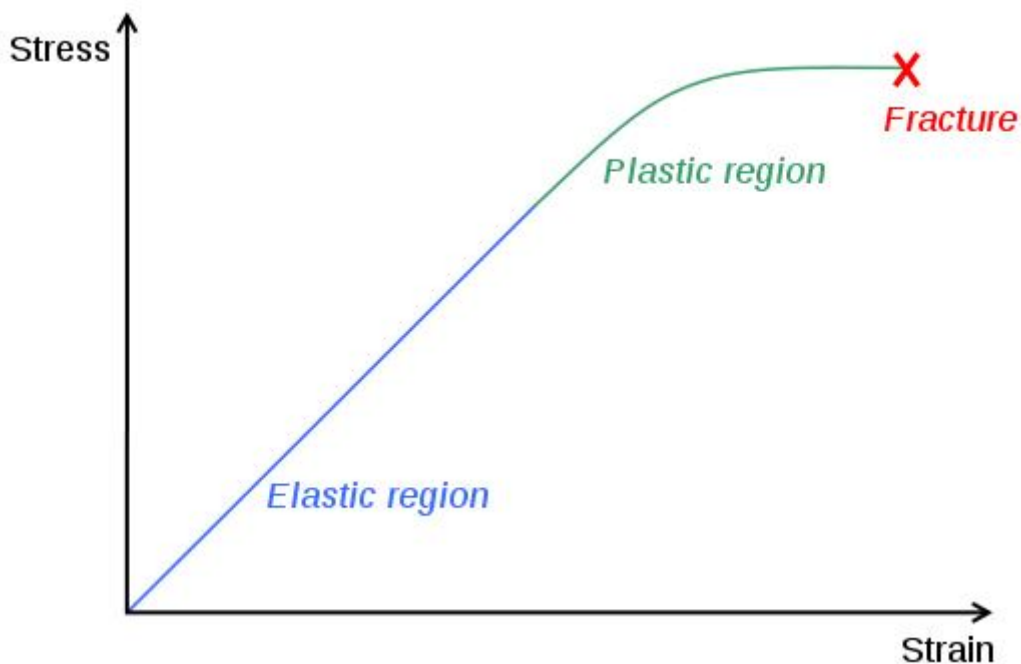
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Tips of the Month

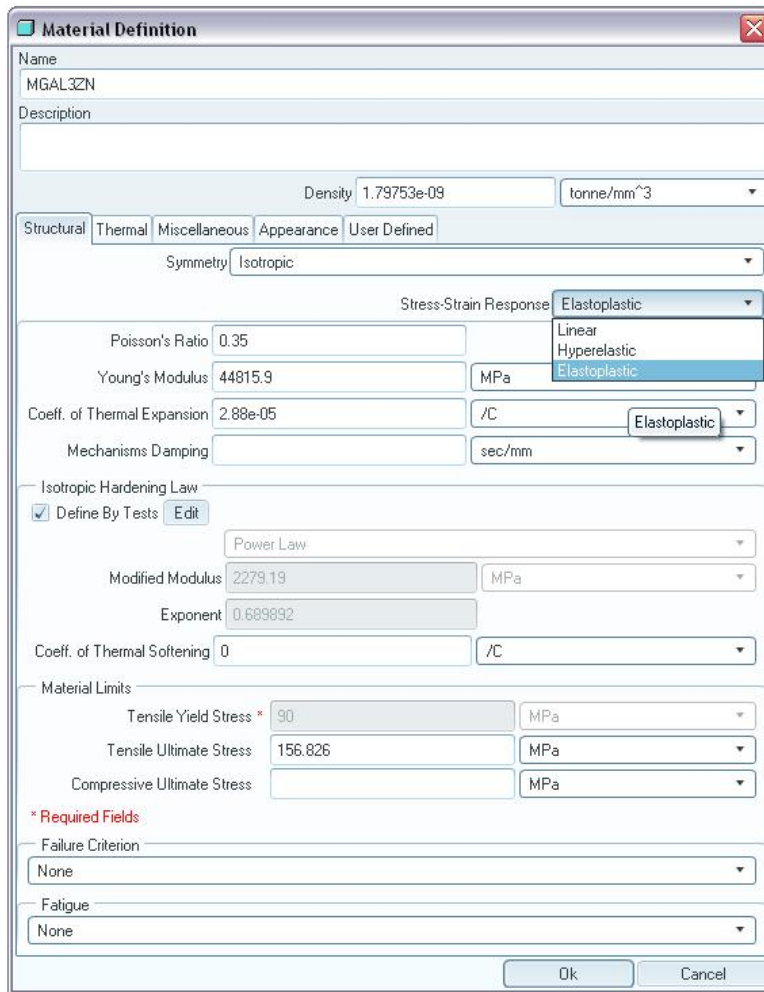
Obtaining Real Structural Results of Plastic Deformation

Pro/Engineer Wildfire 5.0 Advanced Mechanica lets you define materials which are capable of handling plastic deformation.

Plasticity describes the deformation of a material undergoing non-reversible changes of shape in response to applied forces. For example, a solid piece of metal or plastic being bent or pounded into a new shape displays plasticity as permanent changes occur within the material itself.



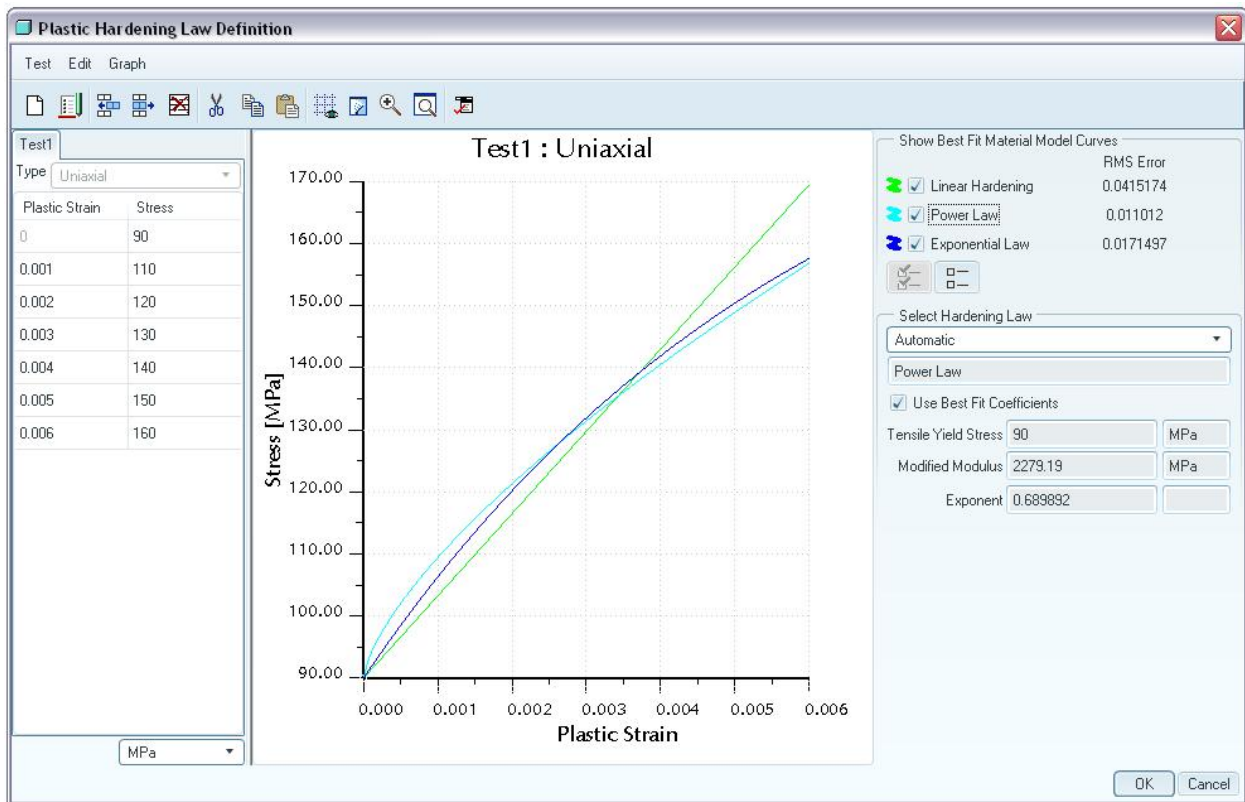
Inside the new materials properties UI you can chose any type of material considering the Stress-Strain response (Linear, Hiperelastic or Elastoplastic).




With any part affected by a plasticity deformation open, go to **Application> Mechanics**, then

Click on the material definition  and select new .

You now can create your own material with the mechanical behavior of plasticity defining a graphic test of Plastic Strain vs. Stress or by defining the coefficients of Linear Hardening, Power Law, Exponential Law and a Perfect Plasticity.

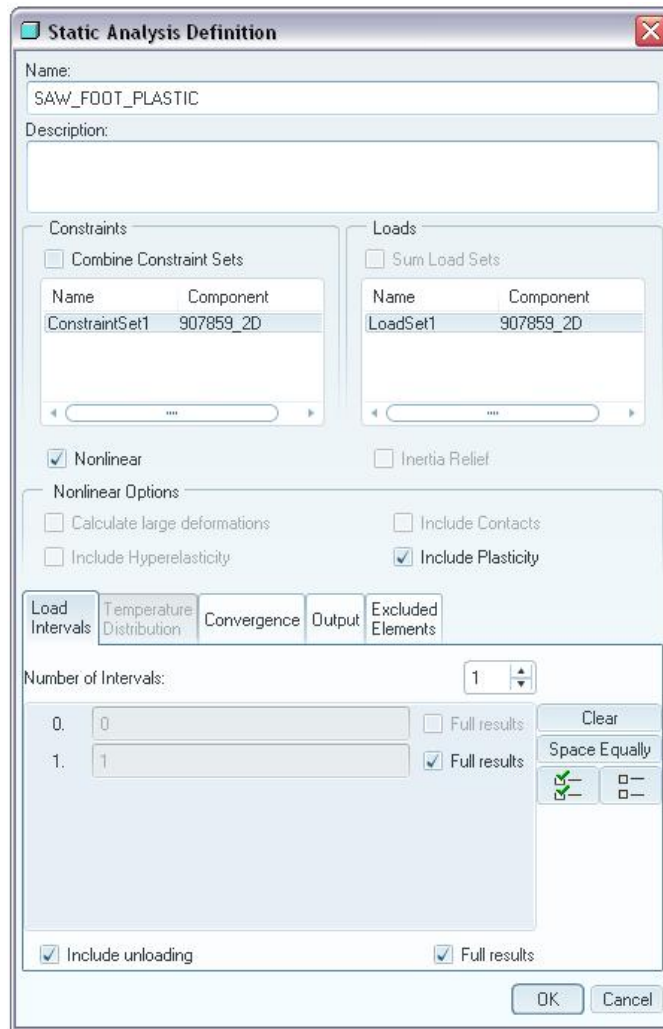


For this example we will define the material by Graphic Tests as showed in the previous image, and we select **Automatic** in the **Select Hardening Law** dialog box and we will mark the check box for **Use Best Fit Coefficients** in order to get a better interpolation of the behavior of the graphic.

After you have you material ready, assign the material to the part using .


Next step, you most define the boundary constrains applying the adequate sets of constrains and loads affected by the part.

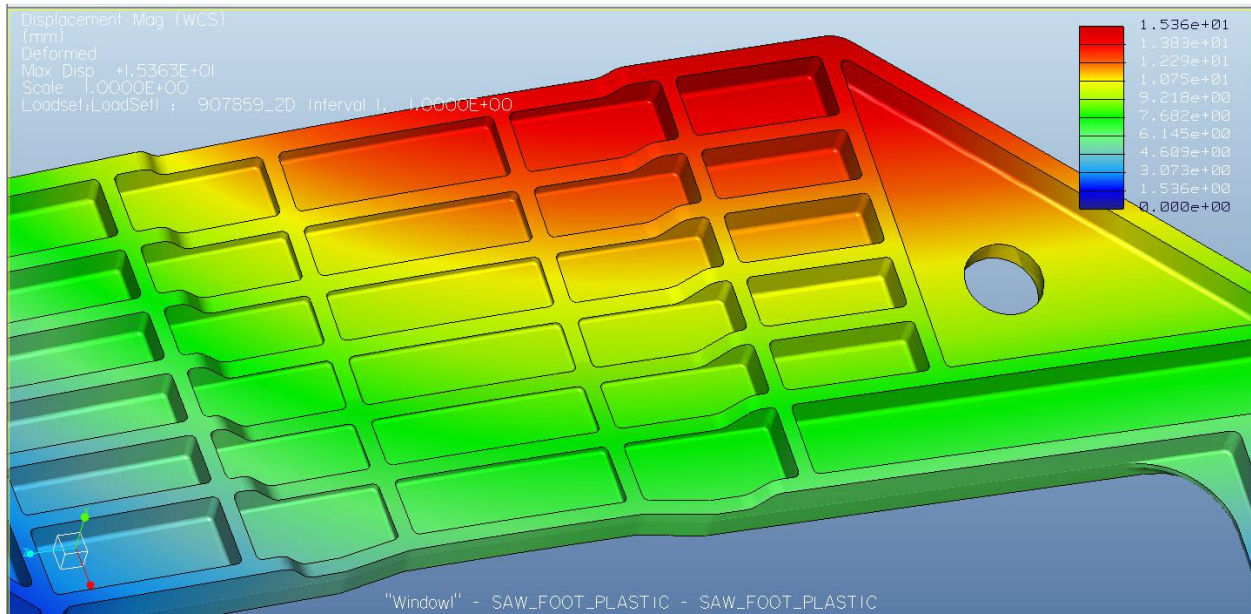
Now go to **Analysis > Mechanical Analyses/Studies... >File> New Static...** and make sure your loads and constrains are selected. Give a name and description to your analysis and then mark the check box of **Nonlinear** and activate the check box of **Include Plasticity**. You will have a setup similar like the image bellow.



You will require a minimum of 1 interval to run this analysis. Define the Convergence Method to **Single-Pass Adaptive**, and make sure you calculate the **Stresses, Reactions** and **Rotations** in the Output tab and then click **OK**

Finally you run the Analysis by clicking the green flag or **Start Run**, and click **OK**.

To Review your results click on  inside the **Analyses and Design Studies** after your analysis is completed and select the results you need to validate.



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Tips of the Month

Toroidal Bend Enhancements in WF 5.0

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Announcements

PTC Tips & Techniques Newsletter Archives

Did you miss an issue? Can't find that awesome technique you read about? Fear not, you can click on the link below and go through our Customer PTC E-Newsletter archives.

[Customer Care Zone](#)

PTC Tips & Techniques Webcasts: Work Smarter. Not Harder.

Click below to see regularly scheduled Tips & Techniques technical Webcasts that are designed to provide you with the most popular time-saving tricks that Pro/ENGINEER users of all skill levels will find useful. Get more out of your maintenance dollars!

[Tips & Techniques: Work Smarter Not Harder!](#)

Special Hardware offers for PTC Customers

- <http://www.hp.com/go/ptc>
- <http://www.hp.com/go/ptcworkstation>

PTC Sponsored Events

- <http://www.ptc.com/company/news/events/index.htm>

Explore what is new with the Pro/ENGINEER Wildfire family!

<http://www.ptc.com/go/showcase>

Connect with PTC using the latest Social Networking resources:

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[You Tube](#)

Also visit <http://social-product-development.blogspot.com/>

E-PROFILES IS HERE!!

We have been eagerly anticipating the debut of the new electronic version of Profiles Magazine and now it is here! This new web site will supplement the print edition of the magazine and will provide new useful features not feasible with paper media. e-Profiles will provide you with 24x7, worldwide access to key information previously available exclusively in the print version. "Tips & Tricks," a popular feature pioneered by Pro/USER, has also moved to the web and will be expanded as the site matures.

Please take a few minutes to check out this new web site. We don't think you will be disappointed.

<http://profilesmagazine.com/>



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Upcoming Events & Training Class Schedules

Upcoming, 2009 Your local Pro/Engineer User Groups
<http://www.ptcuser.org/rugs/>

June 6 – 9, 2010 Orlando, FL USA
PTC/USER World Event
<http://www.ptcuser.org/>

Events

Our seminars and conferences seek to provide you with relevant information regarding product development trends in your industry as well as innovative software learning experiences. Think of them as a constructive day off where you can share experiences and swap ideas with your peers.

If you can't manage to get away, we'll bring it to you. Check back often for regularly scheduled live webcast events.

[You're Invited to Attend...](#)

Please visit the [PTC Education Services](#) website for the latest training information including course descriptions, schedules, locations, and pricing.

- Attend a course at any PTC Center and receive a **free** copy of Pro/ENGINEER Wildfire Student Edition!

<http://www.ptc.com/services/edserv/index.htm>

Live Instructor-Lead Virtual PTC Training Courses

Virtual Classrooms provide interactive learning with a trained PTC instructor in convenient and manageable sessions that last approximately 4 hours over a series of days. It's easy to join a class right from your desk using a phone or voice-over IP technology.

Sessions are performed just like a traditional ILT (including interactive exercises where you and the instructor can work on lab exercises together) and feature some of our most popular ILT courses. These sessions cover the exact same material as the traditional ILT in-center courses. Also look for some of our most frequently requested mini-topics delivered in the same format that are only an hour - two hours in duration.

If you have any questions about these sessions or would like to see getting other courses, not on this list, on the schedule please feel free to contact me for more details. They are a great way to bring training to you without you having to worry about location or being out from work for long stretches.

You can register for these sessions just as you would for any normal ILT class either by:

1. calling order admin at <http://www.ptc.com/services/edserv/training/registra.htm> or
2. you can go to PTC University directly at <http://www.ptc.com/learning> and submit a registration request directly. All you have to do is search the catalog by typing in “virtual” in the search field and you will see a listing.

PTC

Note: This PTC E-Newsletter will continue to be used for the following:

- 1) Inform you on events related to PTC products (user groups, conferences, training schedules, etc.)
- 2) Educate you on solutions that are available at PTC
- 3) Tips & Techniques using PTC Products

Note: These messages are compiled in the local PTC office and will be distributed via e-mail.

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