SOLIDWORKS

SOLIDWORKS 2021 ENHANCEMENTS

Enhancing Large Assembly Performance, Design Performance, and Flexibility

DASSAULT SYSTEMES

Designers face a never-ending stream of challenges. Today's products are larger and more complex than ever before. Development costs have risen and project deadlines have shortened. And remote work, the new normal for many, disrupts collaboration by teams used to working closely together.

Nevertheless, organizations expect designers to maintain or improve their productivity. Designers must be able to open, navigate, and work with enormous assemblies. They must seamlessly document their designs and then share, view, and collaborate with anyone, anywhere, anytime.

The 2021 release of SOLIDWORKS® addresses these challenges and many more. This document outlines its new functionality and explains its performance benefits for designers.
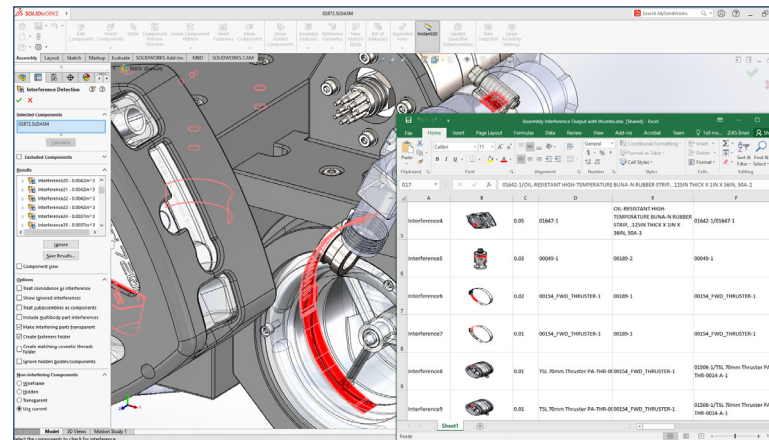
LARGE ASSEMBLY PERFORMANCE

Today's assemblies are bigger and more complex. They contain an increasing number of traditional mechanical parts and electronic control units housing circuit boards that sit on hundreds of electrical components. Their routed systems, which may feature piping and harness systems, are also increasingly complicated.

Building on previous releases, SOLIDWORKS 2021 continues to focus on large assembly performance and flexibility. Its new capabilities enable new workflows that streamline design productivity.

Some assembly improvements are all about speed:

- **Improved performance for occlusion culling and silhouette edge,**

- **Faster toggling between configurations,**

- **Improved performance in Open, Save, and Close of assemblies, and**

- **Faster file saving to SOLIDWORKS PDM Vault.**

Other assembly improvements enhance the design experience:

- Detection and reporting of circular references help improve rebuild times,

- Interference-detection reports can be exported, with images, to Microsoft Excel spreadsheets,

- Lightweight components can, if the user wishes, automatically resolve when a Feature Tree node is expanded,

- Defeatured models can now be saved as configurations, allowing faster toggling between full and simplified versions, and

- Chain patterns use distance along the path, or linear distance, for pattern spacing, making modeling of chain drive systems more realistic and more accurate.

Other enhancements to assemblies include user interface improvements:

- In the Mates Property Manager, the Standard, Mechanical, and Advanced mate types are now on separate tabs,

- When flipping the alignment of a mate, the edited mate flips,

- A default constraint type can be specified and the rotation for slot mates can be locked, and

- Synchronizing configuration of patterned components to the seed will block changes to the configuration of patterned instances.

LARGE ASSEMBLY
PERFORMANCE

LARGE ASSEMBLY
DRAWING PERFORMANCE

IMPROVEMENTS ACROSS
THE BOARD

CONNECTING SOLIDWORKS
TO 3DEXPERIENCE
PLATFORM

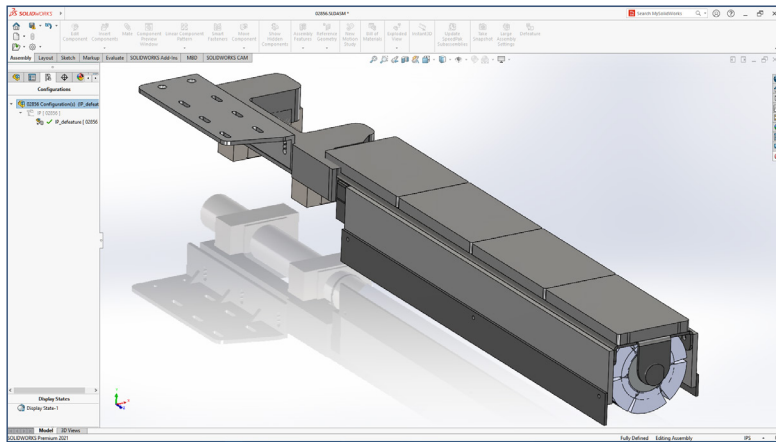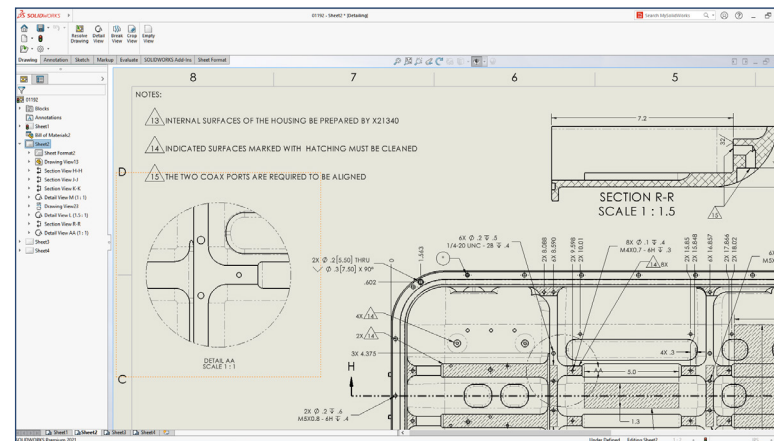SUMMARY AND
CONCLUSIONS

LARGE ASSEMBLY DRAWING PERFORMANCE

Creating drawings for a large, complex design can be as challenging as creating the assembly. Designers must create clear, concise documentation, which often means they must include fine details to avoid confusion associated with oversimplified drawing views. They need a way to capture the details without reducing performance.

The solution is the use of Detailing mode, first introduced in SOLIDWORKS 2020. Detailing mode allows users to quickly open and detail large drawings. They save significant time because model data is not loaded, yet users may add and edit annotations and drawing views within the drawing. SOLIDWORKS 2021 refines Detailing mode.

SOLIDWORKS 2021 extends the capabilities of Detailing mode by introducing several productivity-enhancing capabilities to enable new workflows, including the following:

- Users can add hole callouts for holes created by the Hole Wizard, Advanced Hole, Hole, Extruded Cut, Swept Cut, and Revolved Cut features.

- For existing dimensions and annotations, the user can now

  - Edit dimension tolerance values,

  - Edit dimension characteristics, such as line type and arrow type,

  - Add and remove dimensions in sets of chain and baseline dimensions, and

  - Edit annotation note characteristics and content.

- Users can create and modify Break, Crop, and Detail views and add dimensions and annotations.

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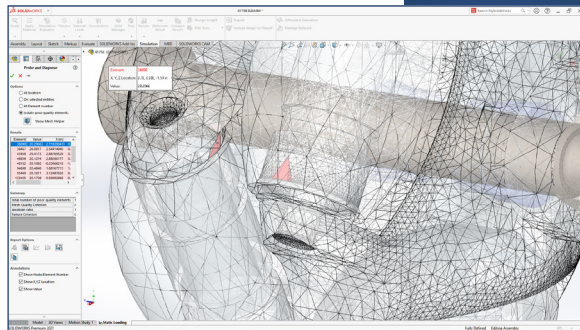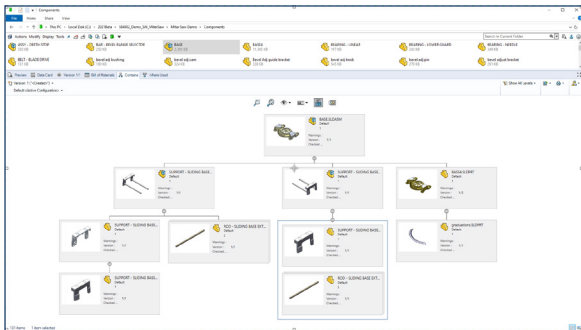# IMPROVEMENTS ACROSS THE BOARD

SOLIDWORKS 2021 is a feature-rich solution that introduces advanced assembly and drawing capabilities as well as many more improvements, including faster and more robust simulation, improved electrical routing, and streamlined PDM.

In the 2020 release, SOLIDWORKS made improvements to incompatible mesh bondings and blended curvature-based mesh performance. Now, designers can identify, isolate, and fix poor quality mesh elements. Improvements to accuracy bonding and convergence through contact stabilization are also now available.

The new release gives designers increased flexibility in creating electrical routes. They can deal with the configuration of multiple wires and cables, and join wires using a splice component or splice the wires without a component. They can support end terminations in the Connector Tables and the Interconnects and Accessories Library, allowing them to work with discrete wires and flattened routes with ease.

Plastics simulation is another area of focus for SOLIDWORKS 2021. Designers can use enhanced modeling and meshing of runners, baffles, and bubblers to improve accuracy; easily set up advanced Injection Processes workflows; and understand injections units. This capability streamlines plastics simulation significantly, building on previous releases that simplified material definitions and associated workflows.

SOLIDWORKS 2021 also provides advanced data management options. These enable significant time savings when performing PDM operations. The new release improves integration with Windows Explorer, allowing designers to conduct browser-based PDM work with better thumbnail support. It's now easier to add files to the Vault, and there's also greater flexibility when controlling custom columns sets. Icon selection is now available for workflows states, and transitions have been improved to determine the status of a file quickly.

SOLIDWORKS 2021 Enhancements

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CONNECTING SOLIDWORKS TO 3DEXPERIENCE PLATFORM

While SOLIDWORKS 2021 provides a host of streamlined capabilities, advancements in Dassault Systèmes' broader product portfolio give designers the tools they need to collaborate with others seamlessly. The **3D**EXPERIENCE® platform provides a vast array of new capabilities to help designers and other key stakeholders across the product development lifecycle.

SOLIDWORKS 2021 easily connects to the **3D**EXPERIENCE ecosystem in the cloud, enabling seamless product development workflows. Designers can share models between SOLIDWORKS 2021 and **3D**EXPERIENCE tools. This ability to share models enables collaboration in real time from anywhere, and on any device, for the world's increasingly remote workforces. Designers can easily extend their design ecosystem with new capabilities, such as subdivision modeling, conceptual design, and product lifecycle and project management in the cloud, allowing them to keep pace with their business and the broader industry.

The **3D**EXPERIENCE WORKS suite further streamlines cross-organizational collaboration, uniting designers with other teams under one cloud-based product development environment. The browser-based 3D Sculptor and 3D Creator apps deal with geometric complexity. 3D Sculptor provides a 3D subdivision modeling solution to create stylized, organic, and ergonomic models with ease. 3D Creator provides a 3D concept modeling solution. Both are fully interoperable with SOLIDWORKS Desktop and other **3D**EXPERIENCE apps.

For simulation, the **3D**EXPERIENCE platform unlocks the possibilities of virtual testing and innovation for all SOLIDWORKS users. Easy to access from SOLIDWORKS, scalable for all user types to solve all types of problems, and collaborative with instant sharing and faster decision-making, simulation roles from SIMULIA provide complete solutions for structures, computational fluid dynamics, plastic injection, and simulation review.

When it comes to manufacturing systems, DELMIAWORKS® ERP is an end-to-end solution. Users can capture and track critical business processes across the product lifecycle, providing teams with the right information at the right time.

Thanks to its cloud-based nature, **3D**EXPERIENCE WORKS provides a robust data and product lifecycle management system. Users can work across the SOLIDWORKS 2021 and **3D**EXPERIENCE platforms to boost companywide productivity, collaboration, and innovation.

SUMMARY AND CONCLUSIONS

- Designers face constant productivity challenges as products grow in size and complexity, remote work becomes the new normal, and budgets tighten.

- SOLIDWORKS 2021 helps designers work faster on large and complex assemblies through a combination of performance improvements and new capabilities enabling improved workflows.

- Improvements to Detailing mode allow designers to complete detailing and editing of massive drawings in a fraction of the time required previously.

- SOLIDWORKS 2021 provides enhanced capabilities across the board for structural simulation, routing, plastics simulation, and data management to help designers further streamline their work.

- Using the cloud-based 3DEXPERIENCE WORKS product development platform, designers can seamlessly connect with other teams, while dealing with geometric complexity (3D Sculptor and 3D Creator), and conducting simulation (SIMULIAworks), manufacturing (DELMIAWORKS), and product data and lifecycle management (ENOVIAWorks) tasks.

Plastic Color, As Molded
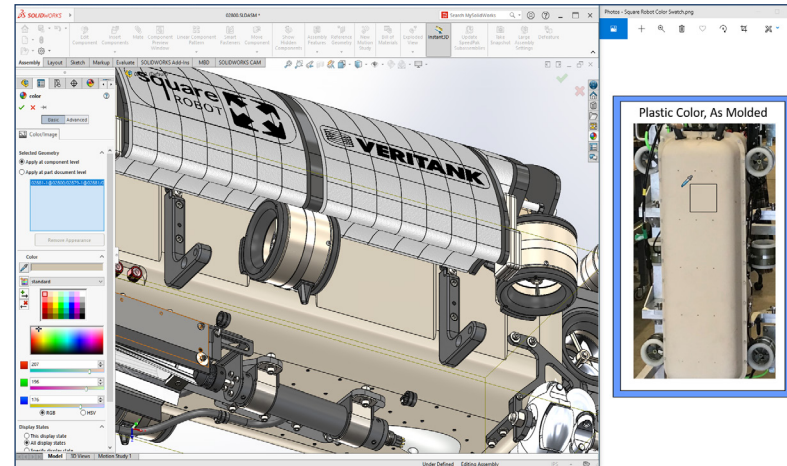
To learn more about how integrated SOLIDWORKS Simulation solutions can improve your development of industrial equipment, visit www.solidworks.com, or call 1 800 693 9000 or +1 781 810 5011.

Our **3D**EXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3D**EXPERIENCE platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit **www.3ds.com**.

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