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SOLIDWORKS



SOLIDWORKS 2016: Realistic 3D CAD Without Compromise

*Workstation Configuration Optimizations - See the Difference &
Experience the Power*

January 21, 2016

SOLIDWORKS 2016

Realistic 3D CAD without Compromise

Workstation Configuration Optimizations — See the Difference & Experience the Power

Moderator

Nancy Johnson, Cadalyst

Panelists



Kurt Anliker

Director of Product Introduction
SOLIDWORKS



Ralph Rocco

Software Engineering (Systems)
HP Workstations Technical Marketing



Rob Jamieson

ISV Marketing Manager
AMD

January 21, 2016



Kurt Anliker

Director of Product Introduction, SOLIDWORKS

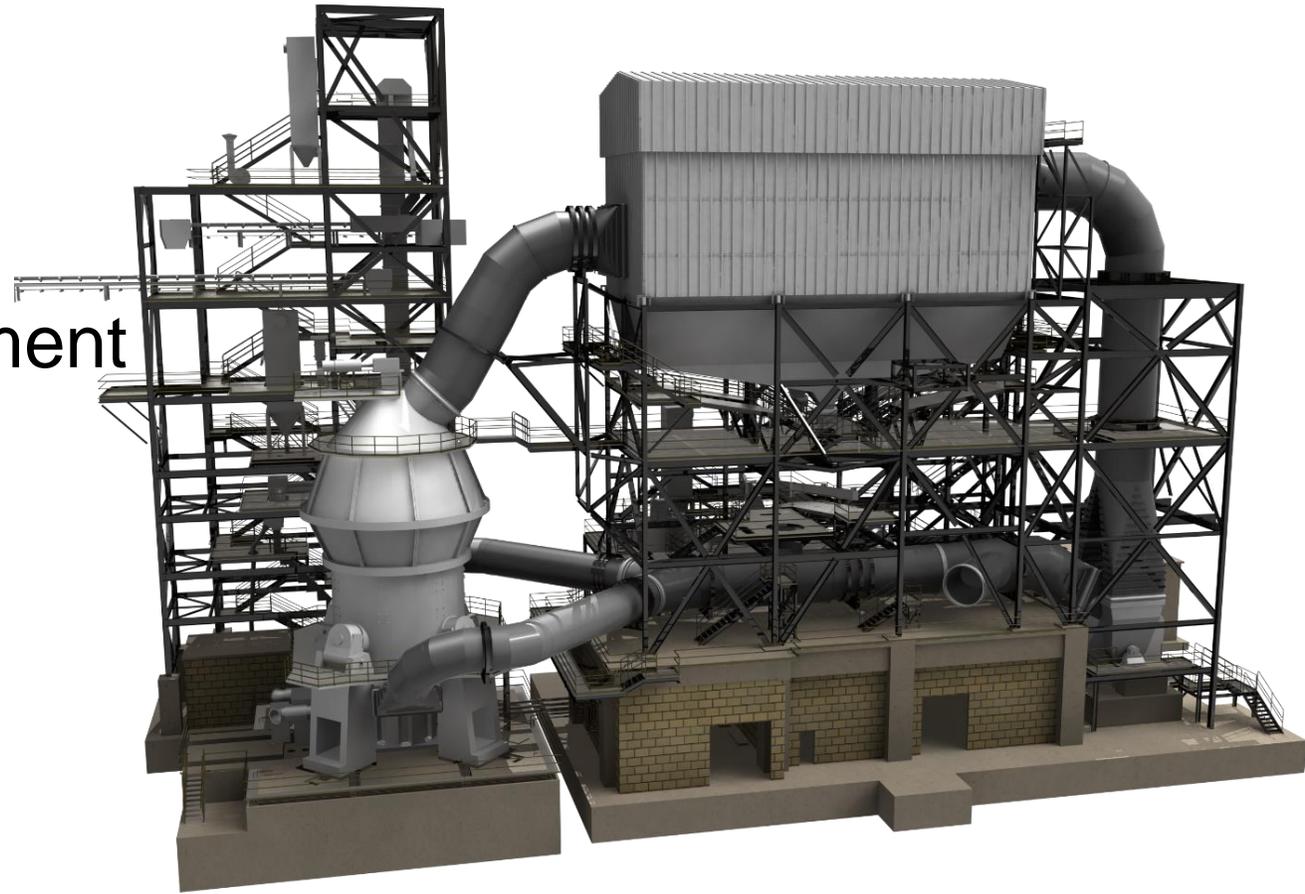
SOLIDWORKS 2016

Make Great Design Happen



SOLIDWORKS 2016

- User Experience Focus
- Leverage your Hardware Investment
- Why Hardware Certification

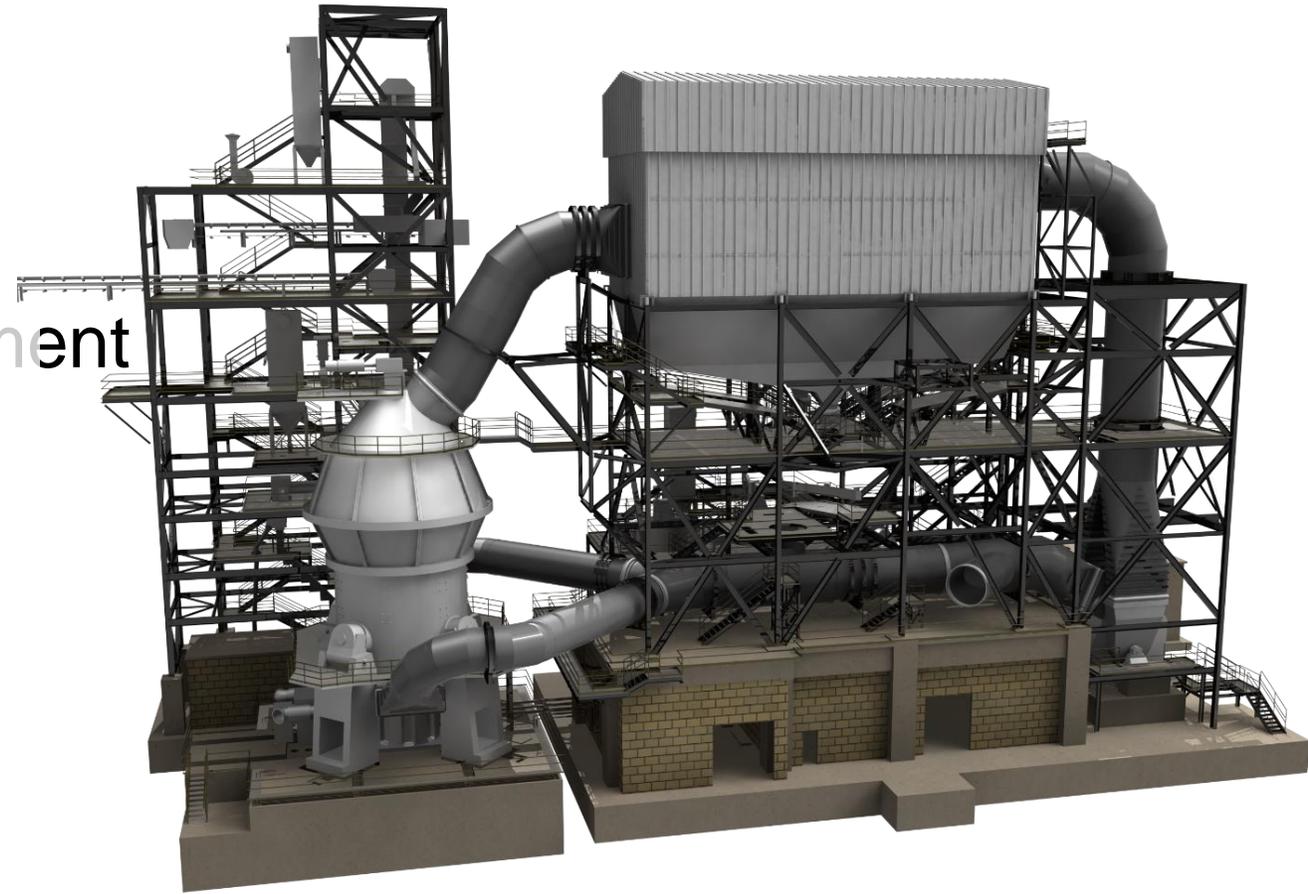


SOLIDWORKS 2016

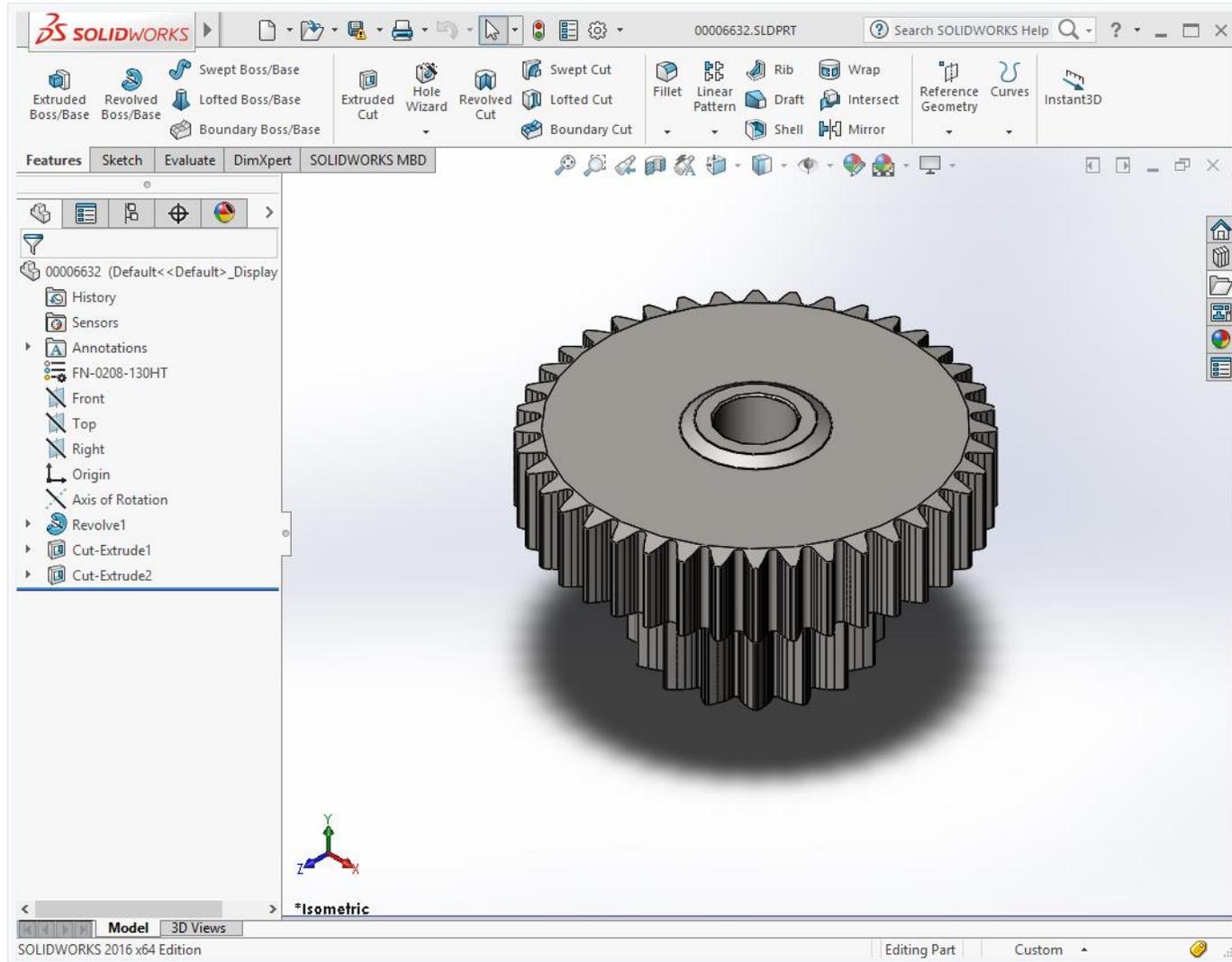
- User Experience Focus

- Leverage your Hardware Investment

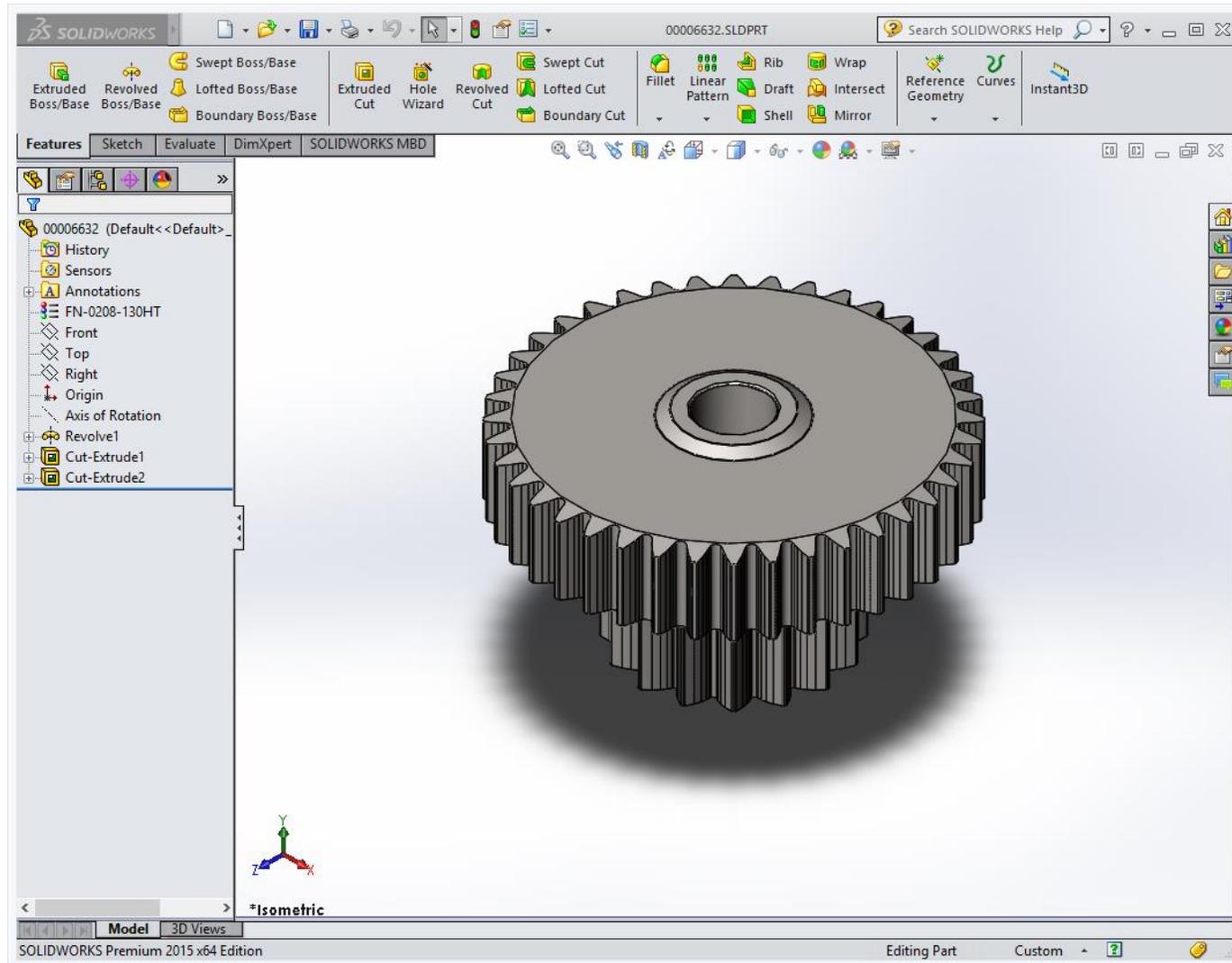
- Why Hardware Certification

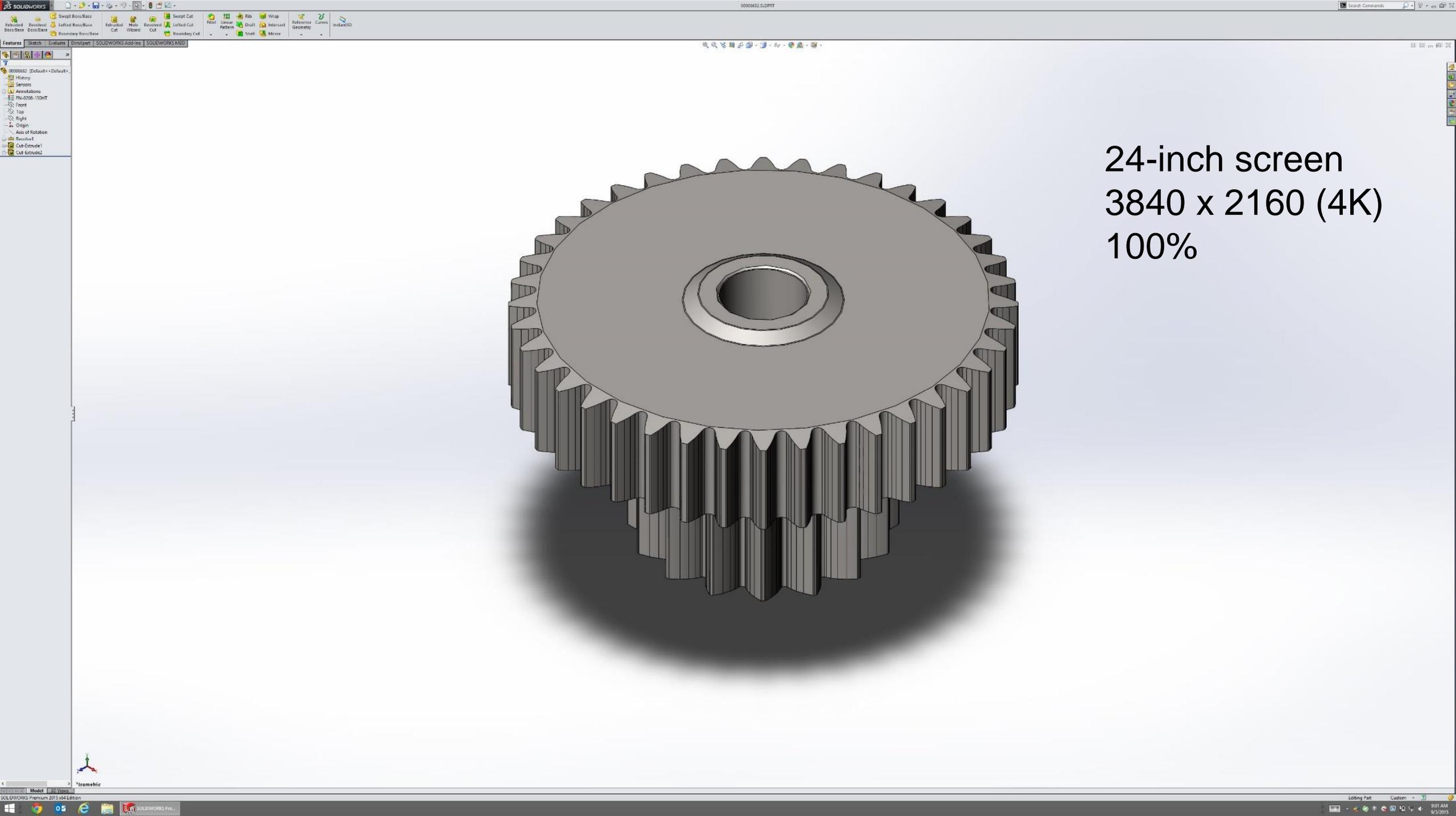


SOLIDWORKS 2016

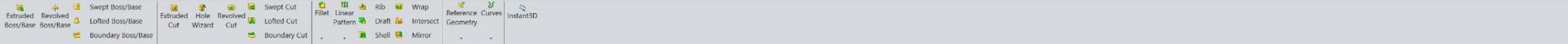


SOLIDWORKS 2015

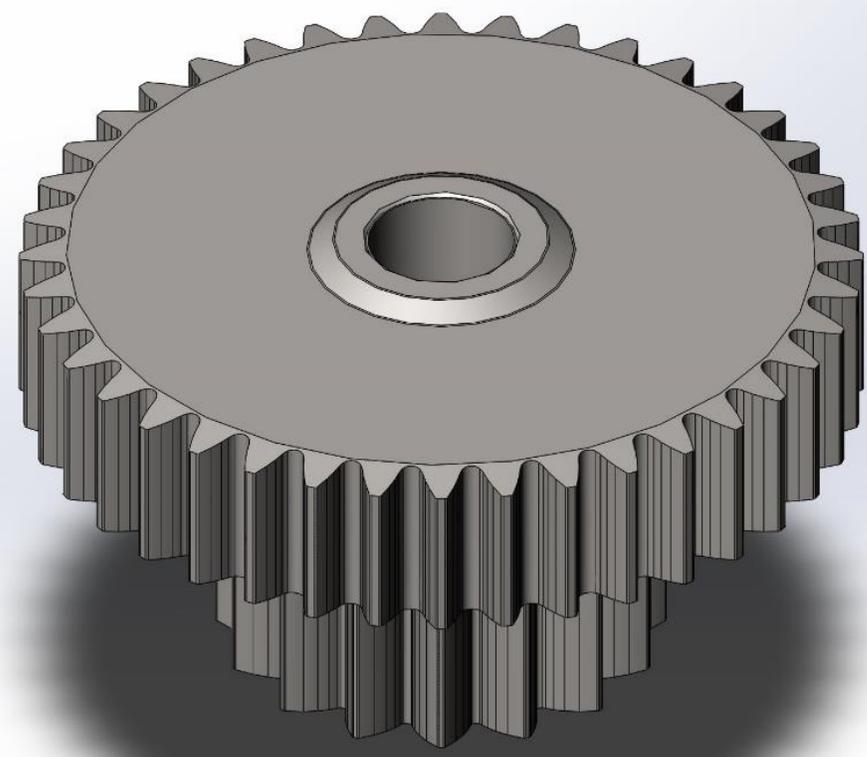




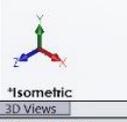
24-inch screen
3840 x 2160 (4K)
100%



- 00006632 (Default
- History
- Sensors
- Annotations
- FN-0208-130HT
- Front
- Top
- Right
- Origin
- Axis of Rotation
- Revolve1
- Cut-Extrude1
- Cut-Extrude2



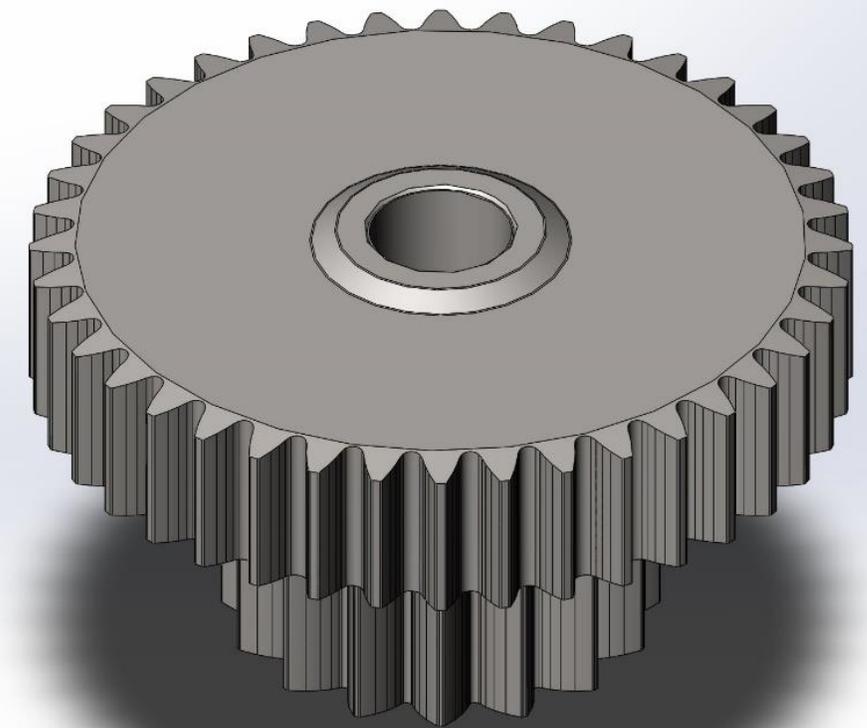
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Extruded Boss/Base Swept Boss/Base Extruded Cut Hole Wizard Revolved Cut Lofted Boss/Base Lofted Cut Boundary Boss/Base Boundary Cut
 Fillet Linear Pattern Rib Wrap Reference Curves Instant3D
 Draft Intersect Geometry
 Shell Mirror

Features Sketch Evaluate DimXpert SOLIDWORKS Add-Ins SOLIDWORKS MBD

- 00006632 (Def)
- History
- Sensors
- Annotations
- FN 0208 130
- Front
- Top
- Right
- Origin
- Axis of Rotati
- Revolve1
- Cut-Extrude1
- Cut-Extrude2



200%



*Isometric 3D Views

Extruded Boss/Base, Swept Boss/Base, Extruded Hole, Revolved Cut, Swept Cut, Fillet, Linear Pattern, Rib, Wrap, Reference Curves, Instant3D, Boss/Base, Lofted Boss/Base, Cut Wizard, Revolved Cut, Lofted Cut, Draft, Intersect, Geometry, Boundary Boss/Base, Boundary Cut, Shell, Mirror

Features | Sketch | Evaluate | DimXpert | SOLIDWORKS Add-Ins | SOLIDWORKS MBD

- 00006632 (0)
- History
- Sensors
- Annotation
- FN-0208-1
- Front
- Top
- Right
- Origin
- Axis of Rot
- Revolve1
- Cut-Extrud
- Cut-Extrud

Boss-Extrude

From
Sketch Plane

Direction 1
Blind
10.00mm
 Merge result
 Draft outward

Equations, Global Variables, and Dimensions

Filter All Fields

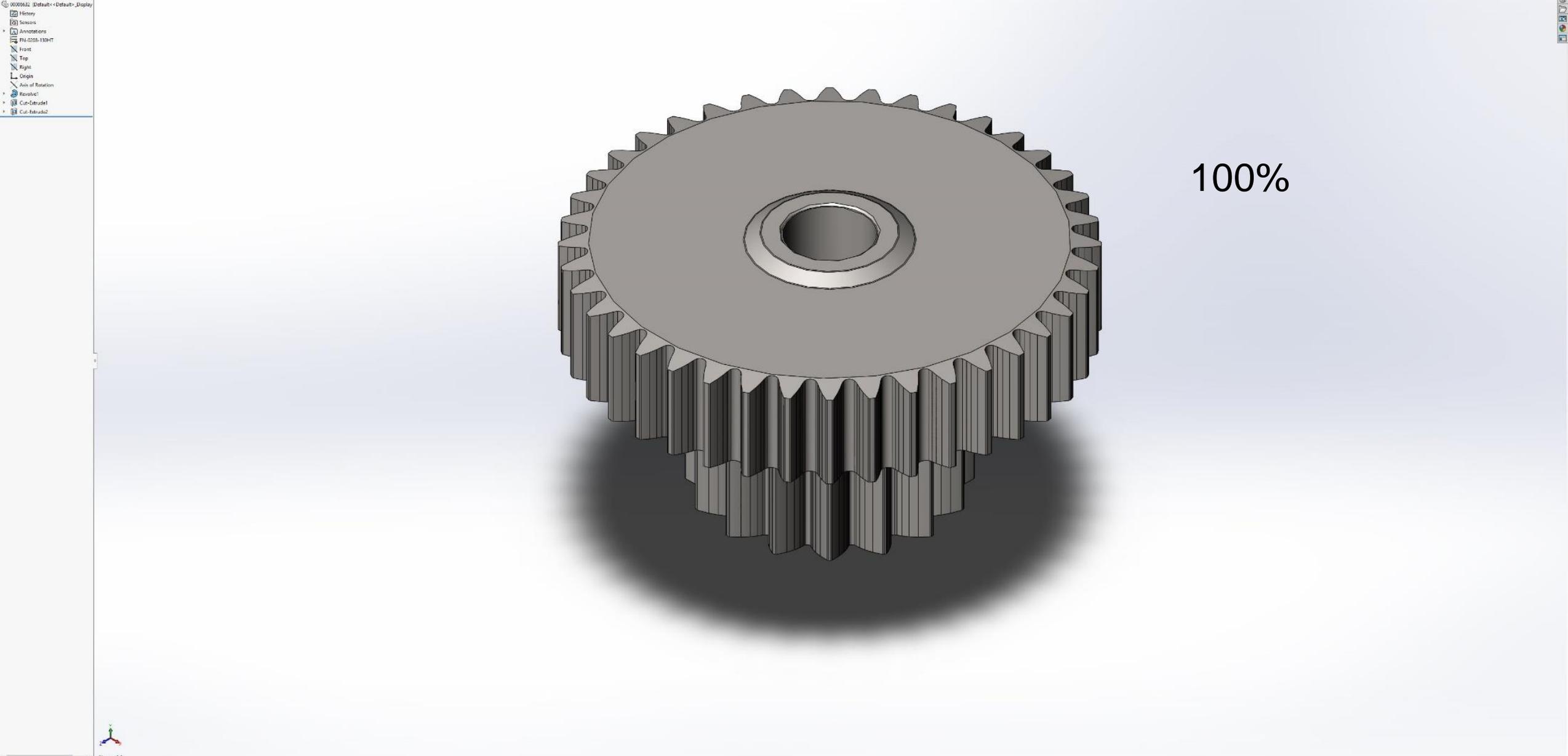
Name	Value / Equation	Units	Comments
Global Variables			
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Features			
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Equations			
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OK, Cancel, Import..., Export..., Help



*Isometric



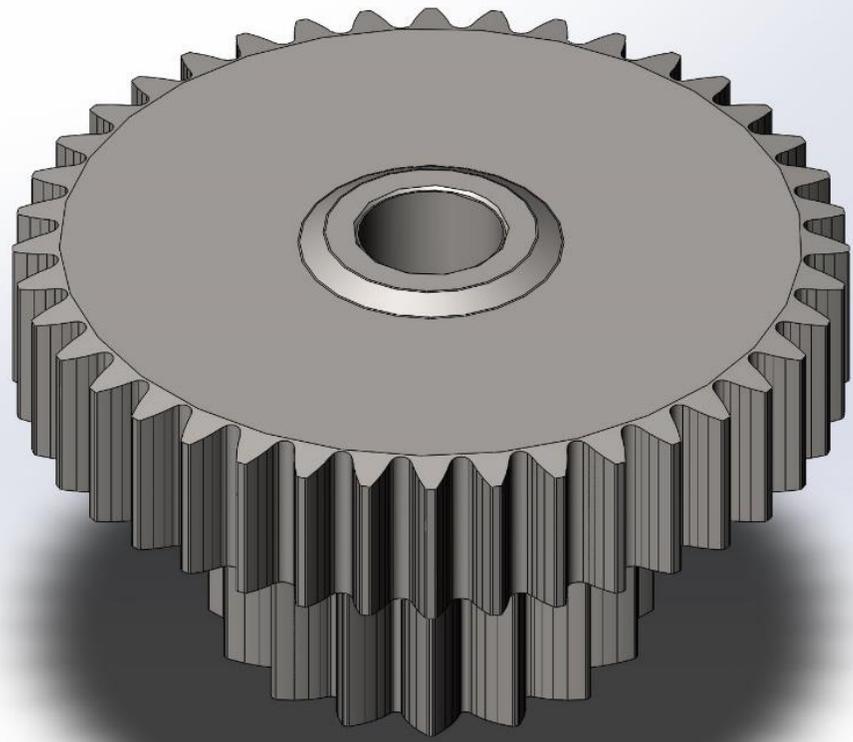
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Features Sketch Evaluate DimXpert SOLIDWORKS MBD



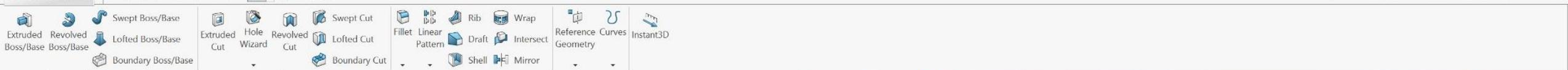
- 00006632 (Default < Default)
- History
- Sensors
- Annotations
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- Front
- Top
- Right
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- Axis of Rotation
- Revolve1
- Cut-Extrude1
- Cut-Extrude2



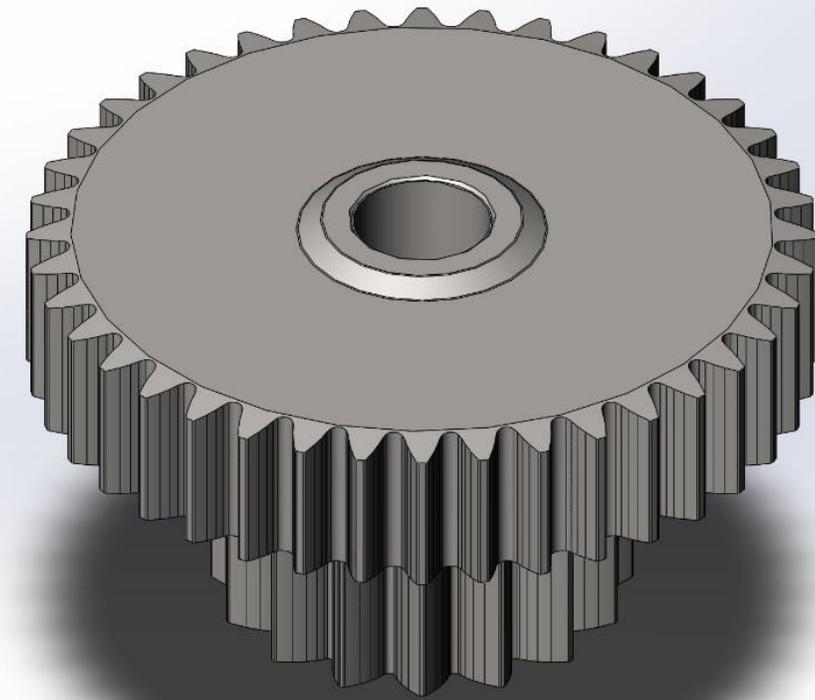
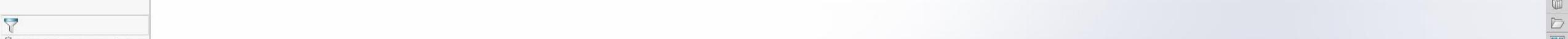
150%



Model 3D Views



Features Sketch Evaluate DimXpert SOLIDWORKS MBD



200%



*Isometric Model 3D Views

Extruded Boss/Base, Revolved Boss/Base, Swept Boss/Base, Lofted Boss/Base, Boundary Boss/Base, Extruded Cut, Hole Wizard, Revolved Cut, Swept Cut, Lofted Cut, Boundary Cut, Fillet, Linear Pattern, Rib, Draft, Intersect, Wrap, Reference Curves Geometry, Instant3D, Shell, Mirror

Features Sketch Evaluate DimXpert SOLIDWORKS MBD

00006632 (Default << De) History Sensors Annotations FN-0208-130HT Front Top Right Origin Axis of Rotation Revolve1 Cut-Extrude1 Cut-Extrude2

Boss-Extrude

From: Sketch Plane

Direction 1: Blind, 10.00mm, Merge result checked

Direction 2: (unchecked)

Equations, Global Variables, and Dimensions

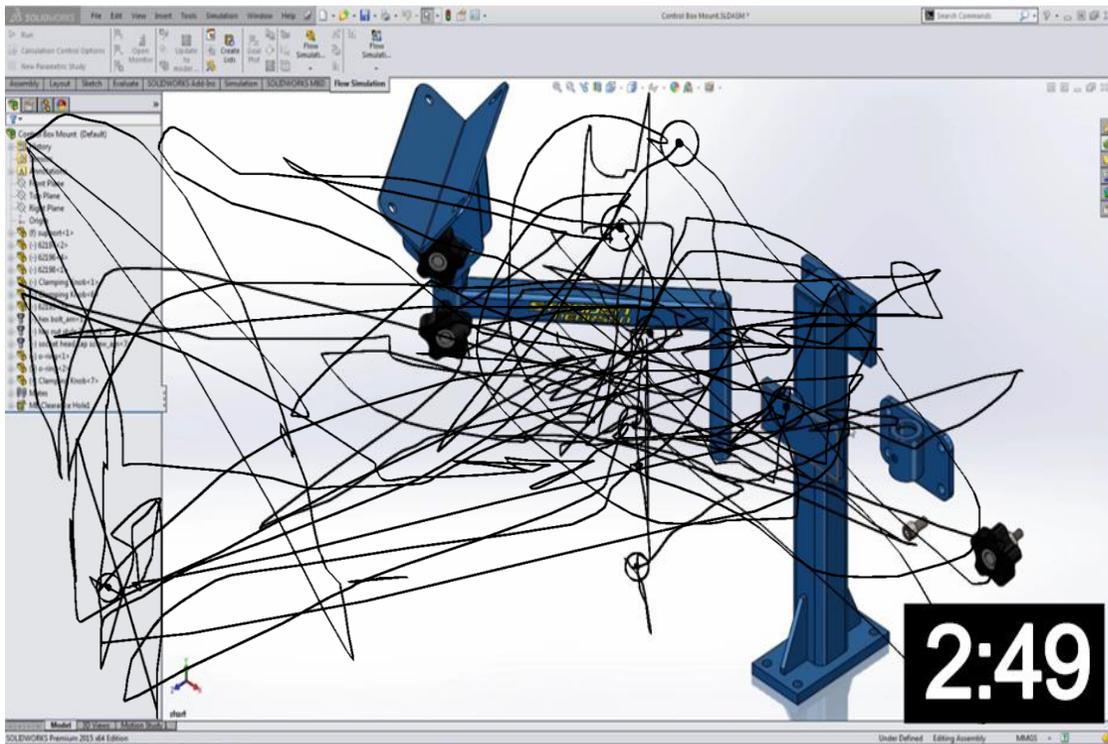
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- Global Variables			
<i>Add global variable</i>			
- Features			
<i>Add feature suppression</i>			
- Equations			
<i>Add equation</i>			

Automatically rebuild Link to external file: Angular equation units: Radians Automatic solve order

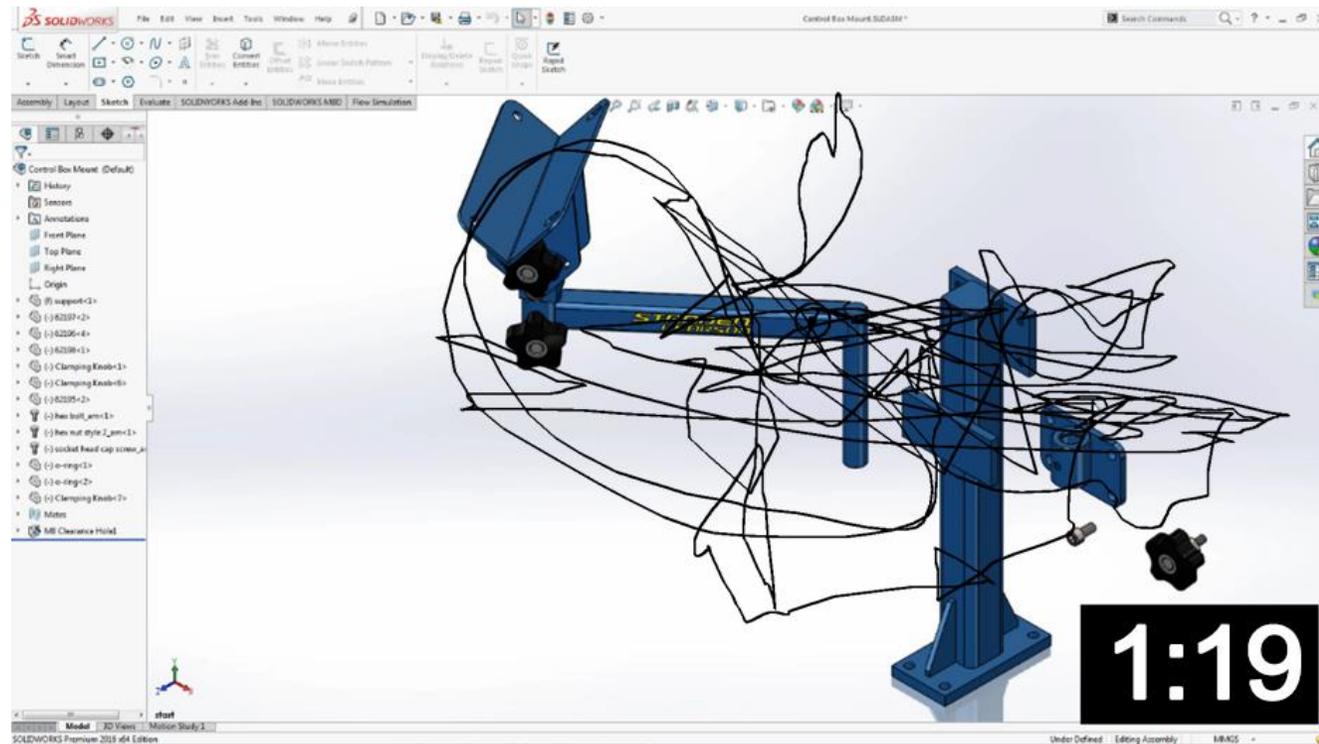


SOLIDWORKS 2016

2015

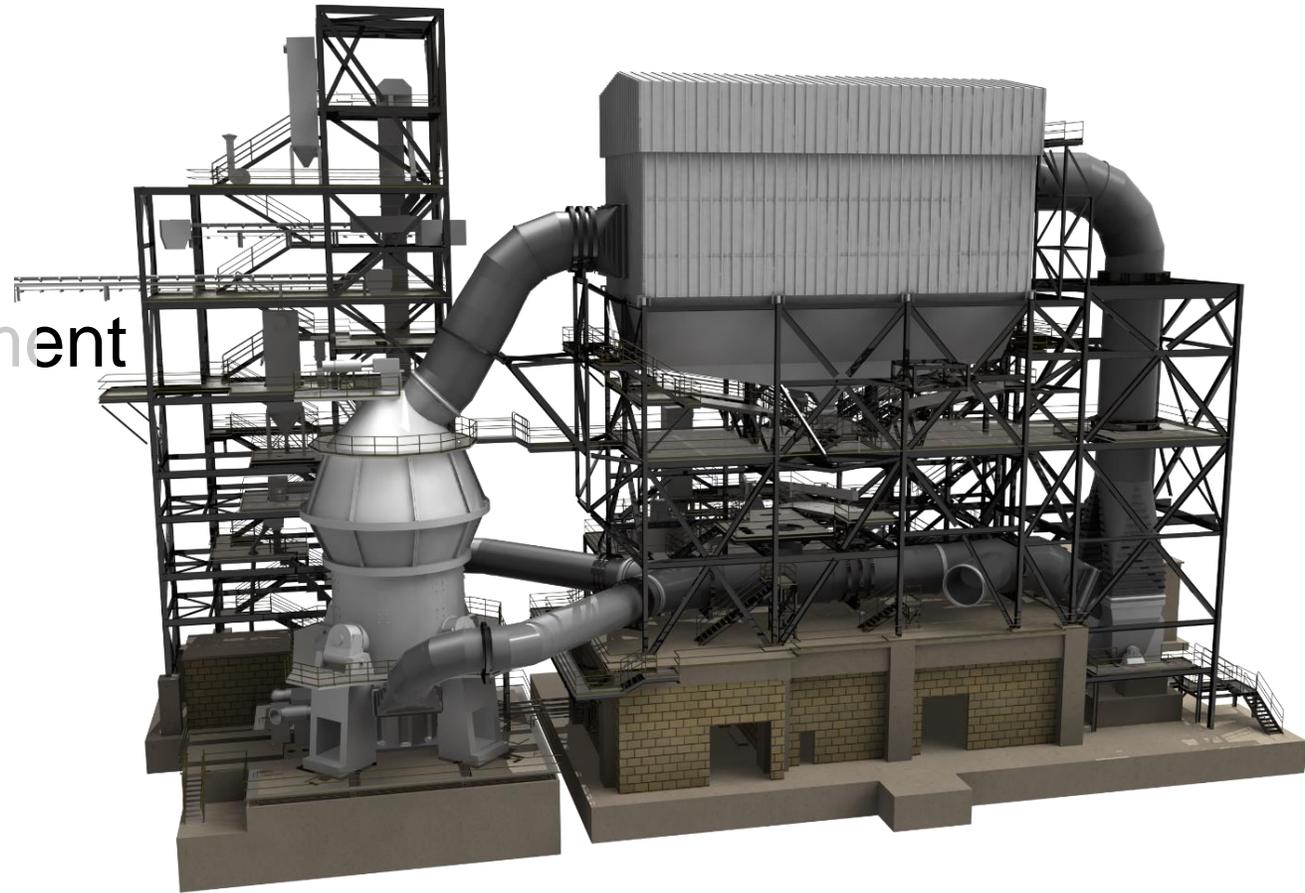


2016



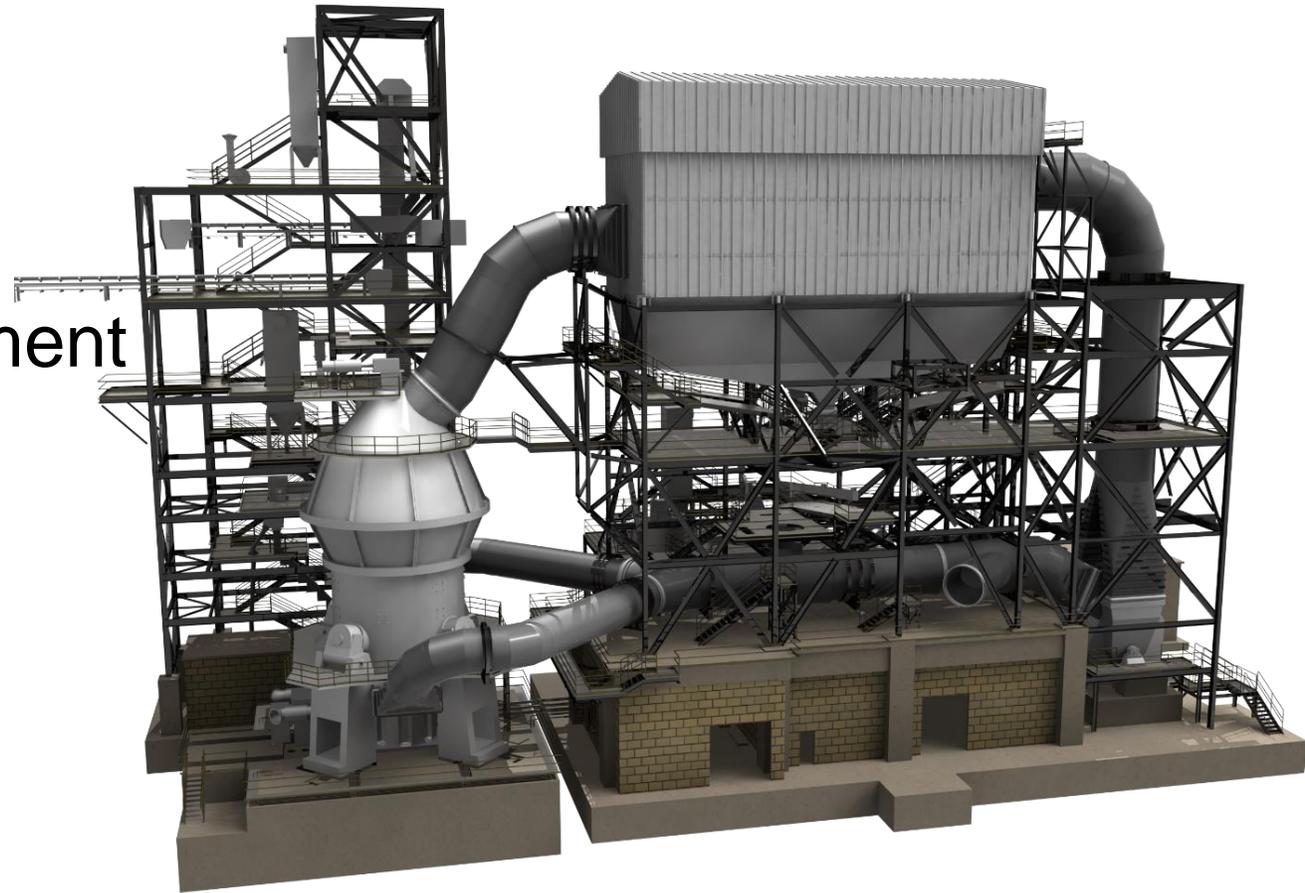
SOLIDWORKS 2016

- User Experience Focus
 - 4K Resolution
 - Faster User Interaction
- Leverage your Hardware Investment
- Why Hardware Certification



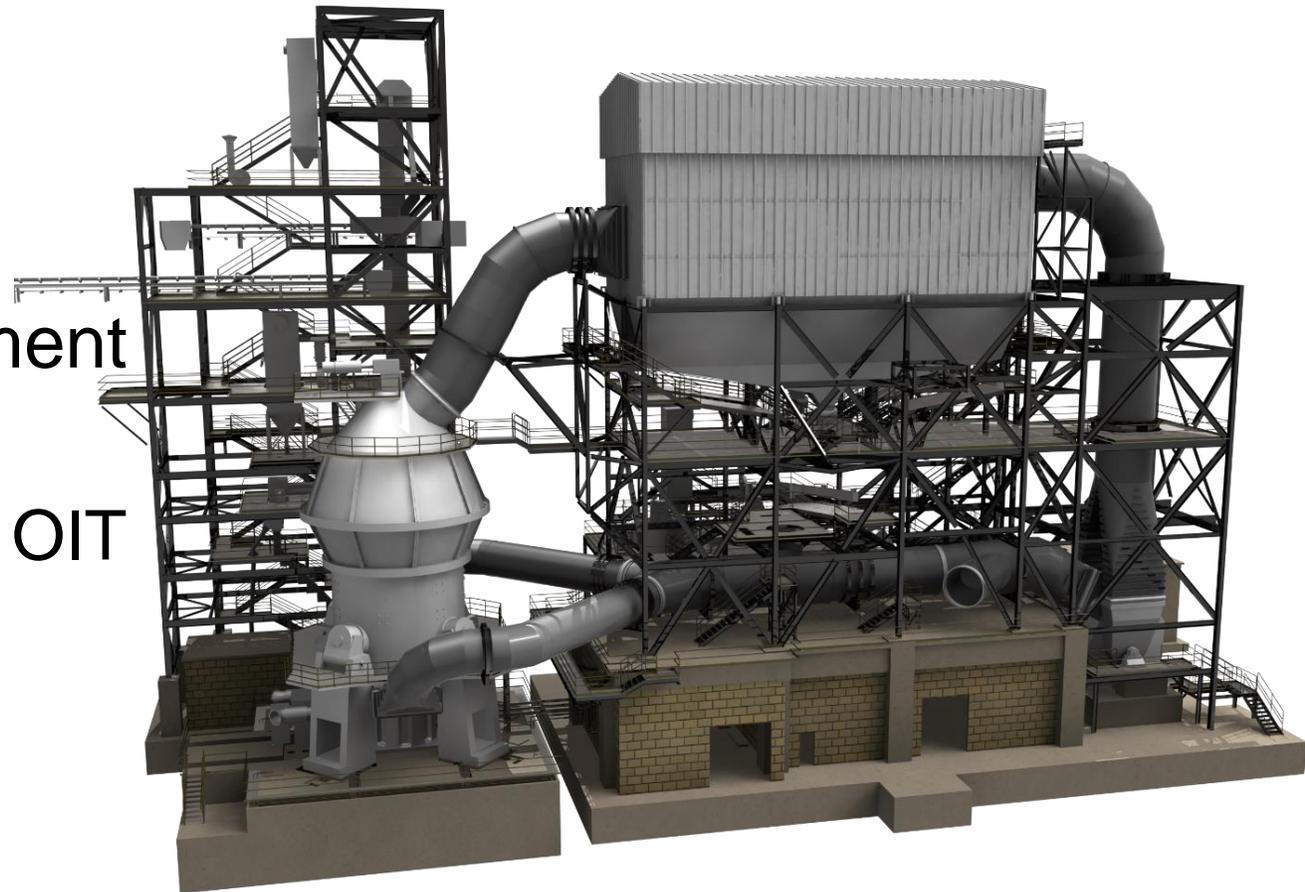
SOLIDWORKS 2016

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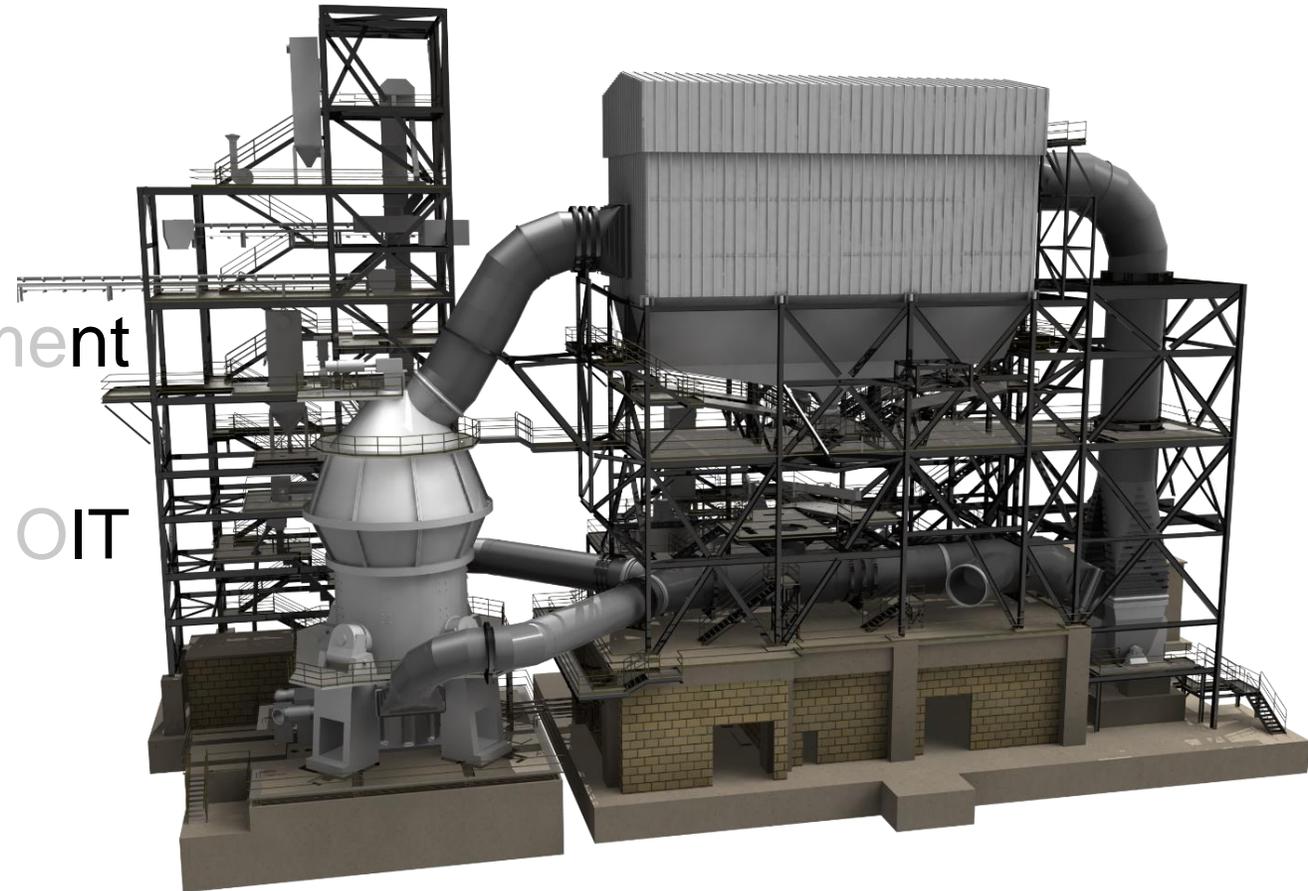
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- Why Hardware Certification



SOLIDWORKS 2016 – Why do we do Hardware Certification

- <http://bit.ly/SWgraphicscarddrivers>

Graphics Card Drivers

Find graphics card drivers for your system to ensure system performance and stability

Display results using one of the two methods listed below:

- ➔ **List Certified Computer System/Graphic Card Combinations**
- If your graphics card *shipped* with your computer, search by *Computer Vendor*.
- ➔ **Browse for Graphics Cards or Non-Listed Combinations**
- If your system combination *is not listed*, or you are just *looking for graphics cards*:
Select --- *Any System Vendor* as the *Computer Vendor* and select a *Graphics Card Vendor*.

Computer Vendor *	Hewlett-Packard	?
Computer Model:	HP Z240 SFF Workstation	?
Graphics Card Vendor:	-----	?
Graphics Card Model:	AMD FirePro W2100	?
SolidWorks Version:	2016	?
Operating System:	Win10 x64	?

Certified (Recommended) Driver Results					
# of Items Shown <input type="text" value="1"/>					
System	Card	Driver	SolidWorks	OS	Notes
HP Z240 SFF Workstation	AMD FirePro W2100	15.20.1045	2016	Win10 x64	Notes

Page 1 of 1 | Displaying records 1 - 1 of 1

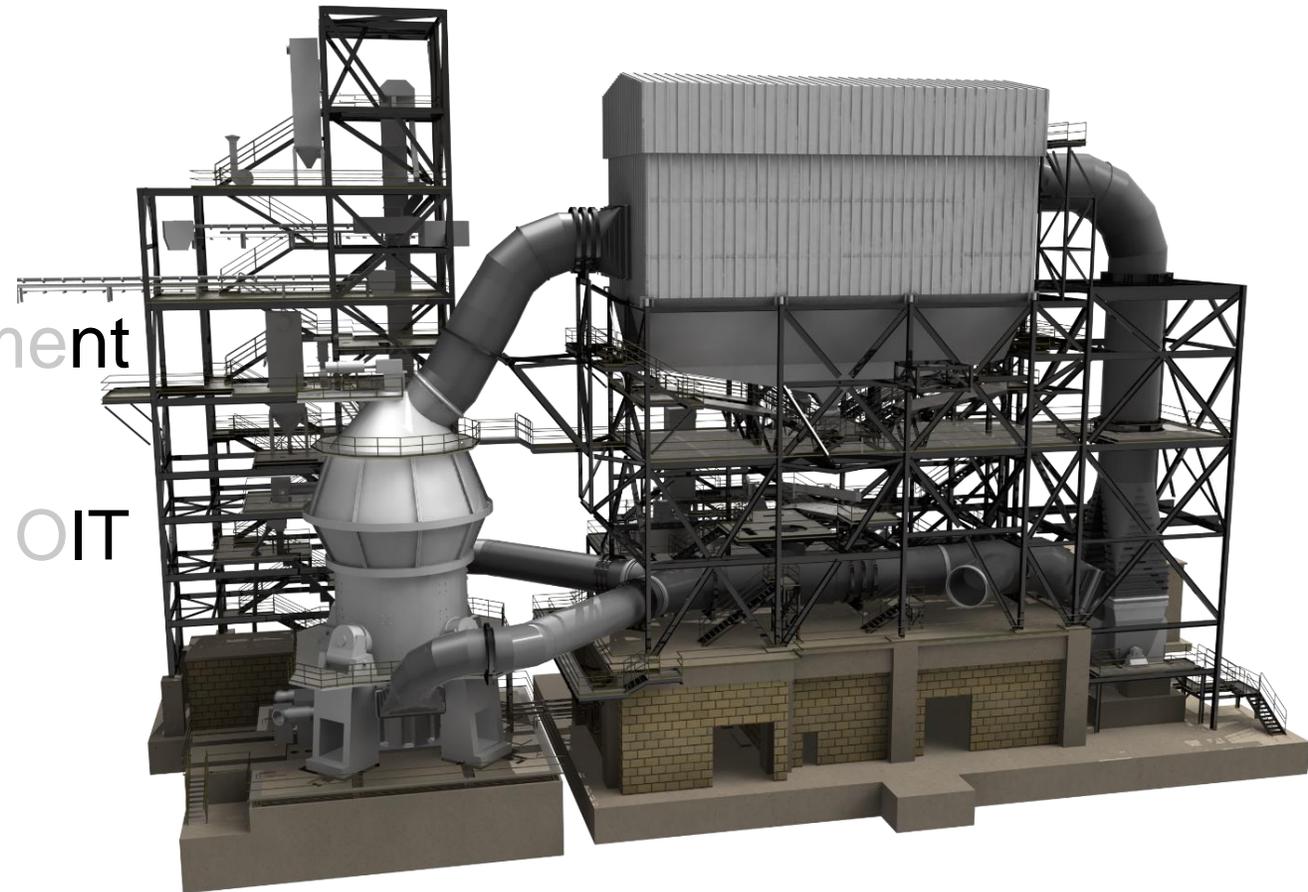
Key:

- Card passed all tests
- Passed with limitations (See Notes)
- Significant stability or repaint problems
- Use SolidWorks graphics card display settings
- 64-bit native support
- Supports all RealView features
- Supports RealView with limitations
- Supports pre-2008 RealView features
- Multi-head hardware accelerated
- Supports 3DStereo viewing with eDrawings



SOLIDWORKS 2016

- User Experience Focus
 - 4K Resolution
 - Faster User Interaction
- Leverage your Hardware Investment
 - Realview with Ambient Occlusion
 - Greater use of Transparency with OIT
 - Overall Performance Gain
- Why Hardware Certification
 - Confidence
 - Maximize Performance



SOLIDWORKS 2016

Make Great Design Happen



Ralph Rocco

Software Engineering (Systems), HP Workstations Technical Marketing

Smart Hardware Choices – HP Z240 with AMD FirePro graphics



SOLIDWORKS HP Z240 Workstation Certification

- Posted at <http://bit.ly/SWgraphicscarddrivers>

Graphics Card Drivers
Find graphics card drivers for your system to ensure system performance and stability.

Display results using one of the two methods listed below:

- ➔ **List Certified Computer System/Graphic Card Combinations**
- If your graphics card shipped with your computer, search by Computer Vendor.
- ➔ **Browse for Graphics Cards or Non-Listed Combinations**
- If your system combination is not listed, or you are just looking for graphics cards:
Select --- Any System Vendor as the Computer Vendor and select a Graphics Card Vendor.

Required *

Computer Vendor: Hewlett-Packard
Computer Model: HP Z240 Tower Workstation
Graphics Card Vendor: AMD
Graphics Card Model: AMD FirePro W7100
SolidWorks Version: --- Select SolidWorks Version ---
Operating System: --- Select Operating System ---

Show Results (5)

Certified (Recommended) Driver Results

System	Card	Driver	SolidWorks	OS	Notes
HP Z240 Tower Workstation	AMD FirePro W7100	15.20.1045	✓	2016 Win10 x64	✓ x64 Notes
HP Z240 Tower Workstation	AMD FirePro W7100	15.20.1045	✓	2016 Win7 x64	✓ x64 Notes
HP Z240 Tower Workstation	AMD FirePro W7100	15.20.1045	✓	2015 Win10 x64	✓ x64 Notes
HP Z240 Tower Workstation	AMD FirePro W7100	15.20.1045	✓	2015 Win7 x64	✓ x64 Notes
HP Z240 Tower Workstation	AMD FirePro W7100	15.20.1045	✓	2014 Win7 x64	✓ x64 Notes

Displaying records 1 - 5 of 5

Key:

- ✓ Card passed all tests
- ⚠ Passed with limitations (See Notes)
- ⚠ Significant stability or repaint problems
- ⚠ Use SolidWorks graphics card display settings
- x64 64-bit native support
- ✓ Supports all RealView features
- ⚠ Supports RealView with limitations
- ⚠ Supports pre-2008 RealView features
- ⚠ Multi-head hardware accelerated
- ⚠ Supports 3DStereo viewing with eDrawings



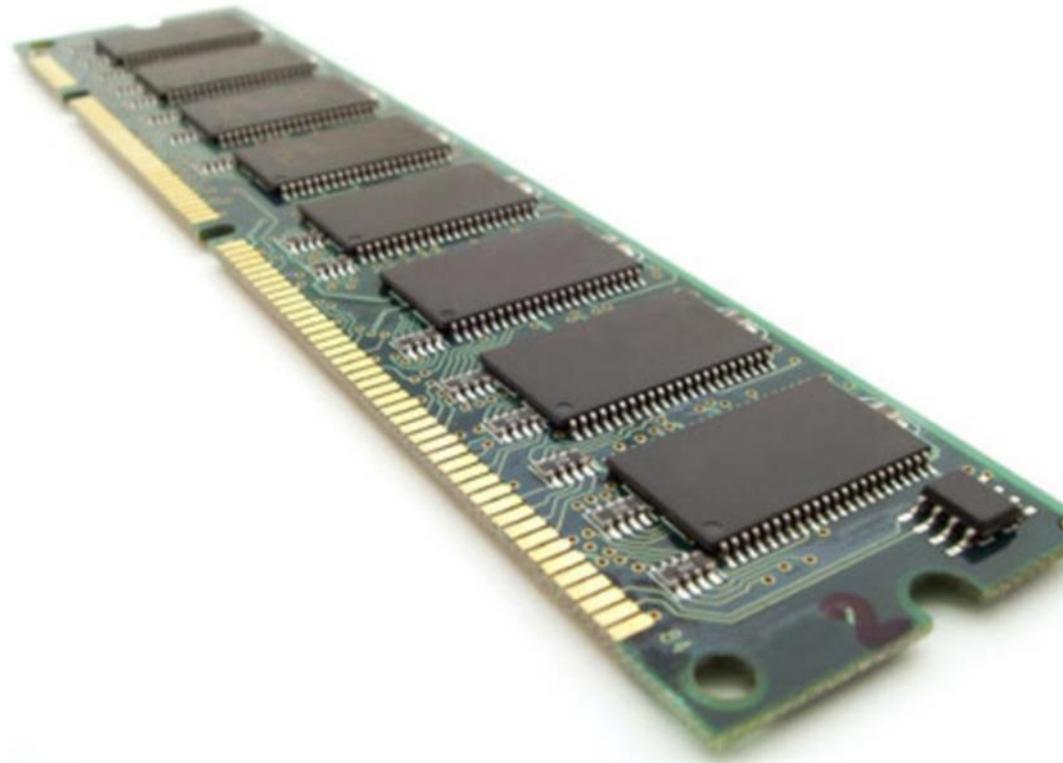
Z240 Processor recommendation

- Intel Xeon E3-1270v5
 - 3.60G/4.0T
 - 4 CPU cores
 - HyperThreading 8 CPU logical cores



Z240 Memory recommendation

- 16GB for SOLIDWORKS modeling
- 32GB for complex assemblies
- ECC (Error Correction Code) memory is important for precision



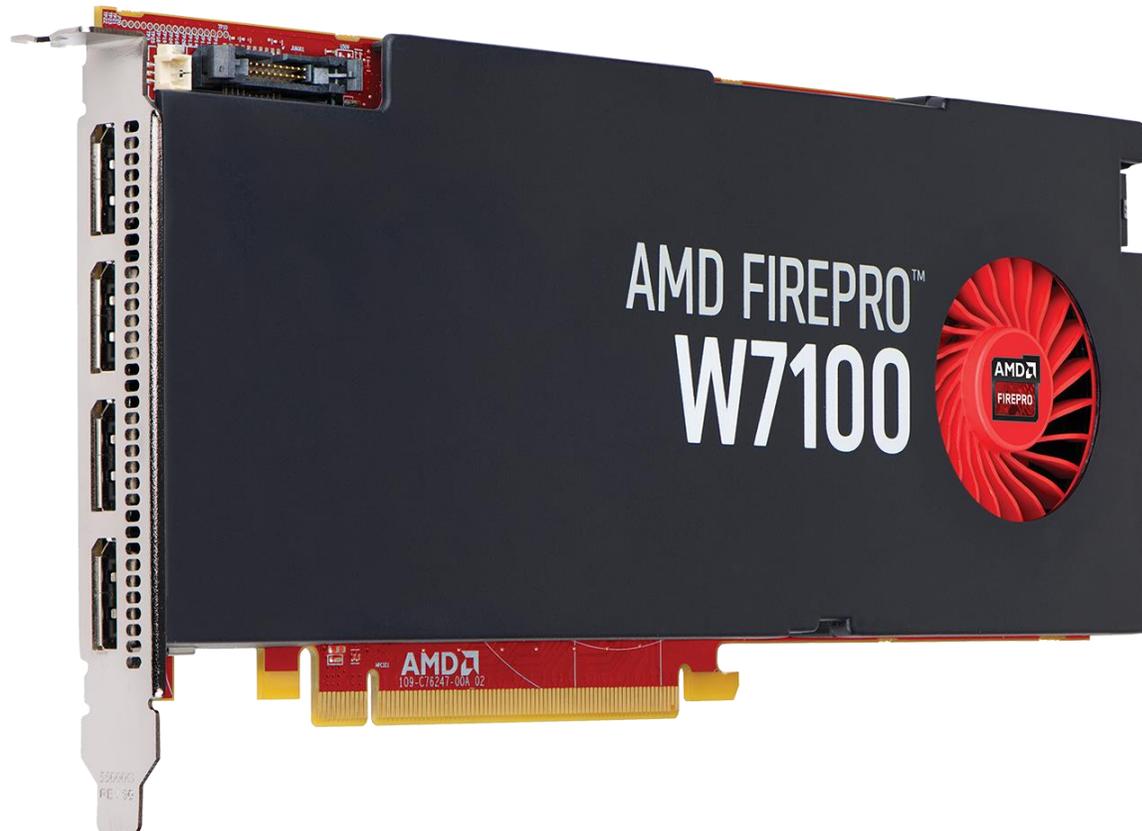
Z240 Storage recommendation

- Solid State Drive (SSD) provides optimal performance
- Large assemblies should load and save quickly
- SSDs are superior to hard drive storage



Z240 Graphics recommendation

- 3D professional graphics card
- Choose the right card dependent on design complexity and features

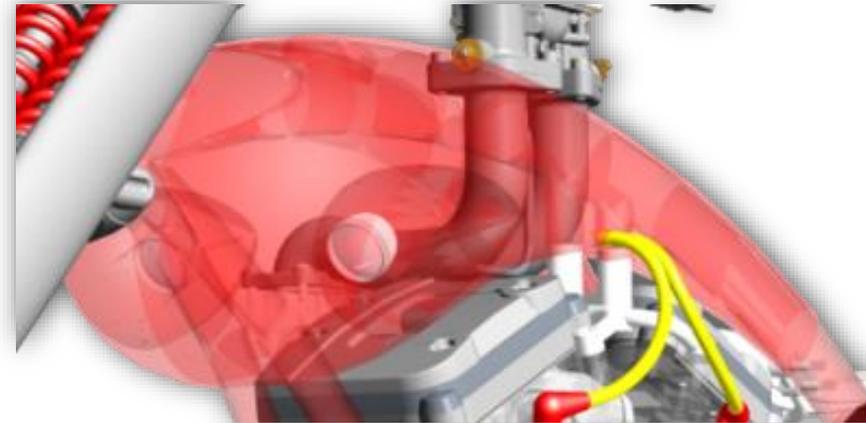


Rob Jamieson

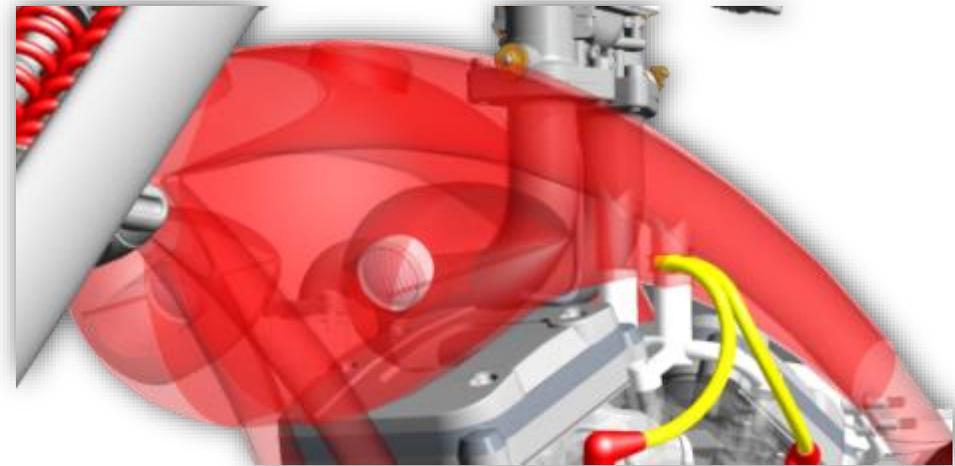
ISV Marketing Manager, AMD

Introduced in SOLIDWORKS 2014 enhanced in 2015 and 2016 with AMD's Help

- Order Independent Transparency
- OIT fixes visual artifacts caused by inaccurate “depth sorting” of the geometry that often happens in the older “blended mode”.
- This means some parts of the object are being rendered incorrectly with the old blended mode technology
- Up to 10x the performance of old blended mode
- OIT is automatically enabled when it sees a **Pro card with 2GB** or more of Memory, card such as the AMD FirePro W2100 but not the nVidia K420 and K620 or Intel cards as of Sept 2015



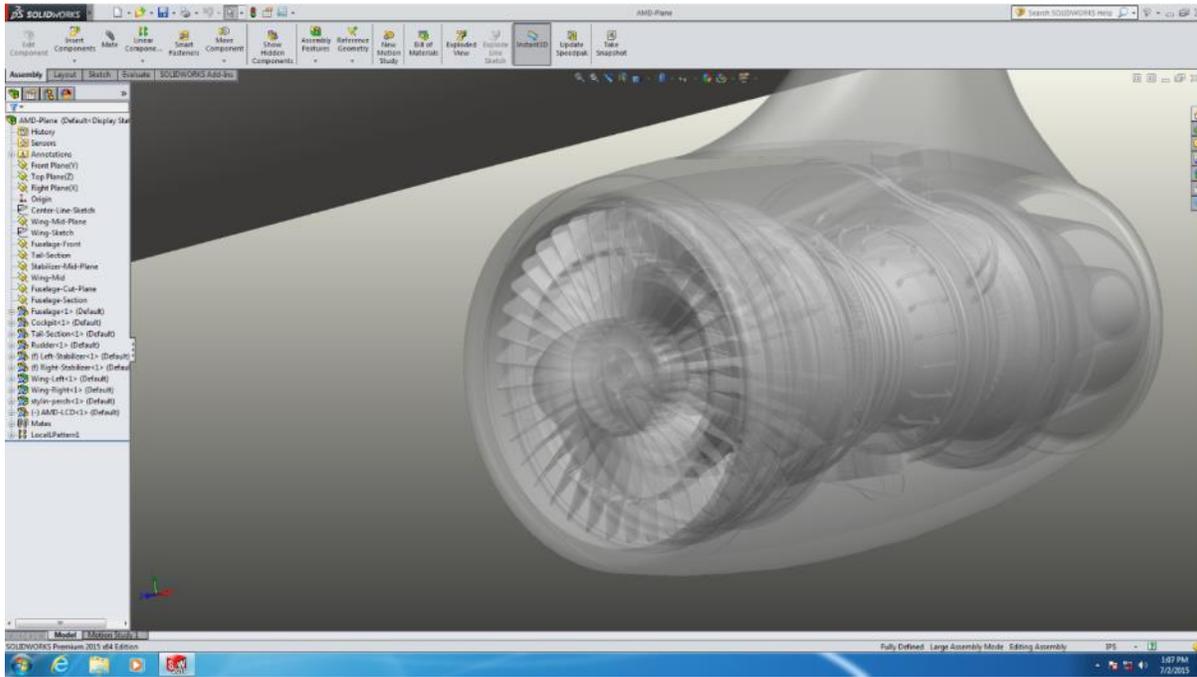
▶ Without OIT



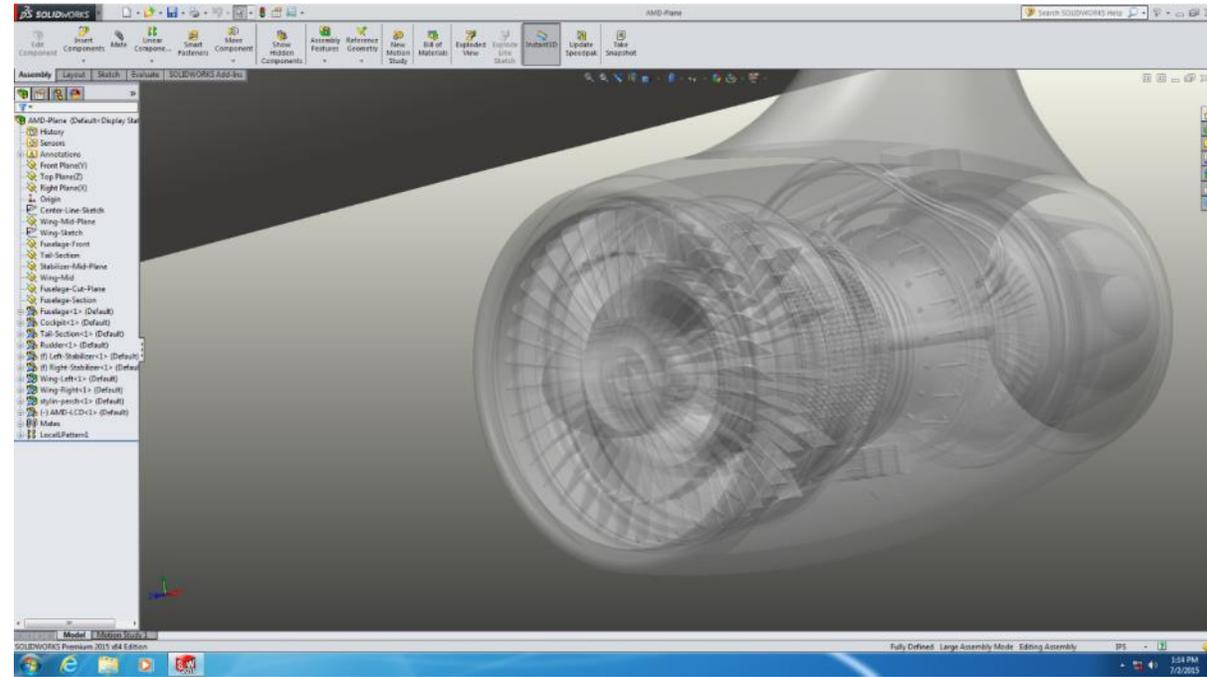
▶ With OIT



SOLIDWORKS® 2015/2016: ORDER INDEPENDENT TRANSPARENCY (OIT)



OIT on



OIT off

„Without OIT, it's more difficult to perceive depths and the relative position of parts.“

-- Greg Corke, Editor Develop3D

Magazine

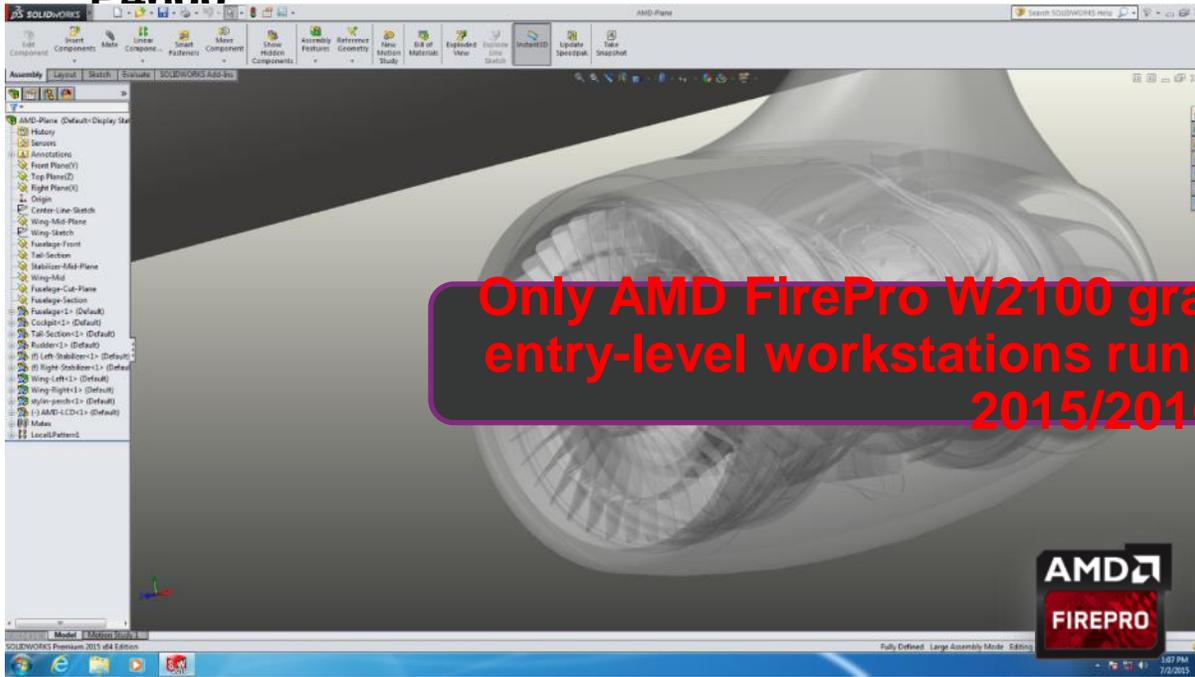


SOLIDWORKS® 2015/2016: ORDER INDEPENDENT

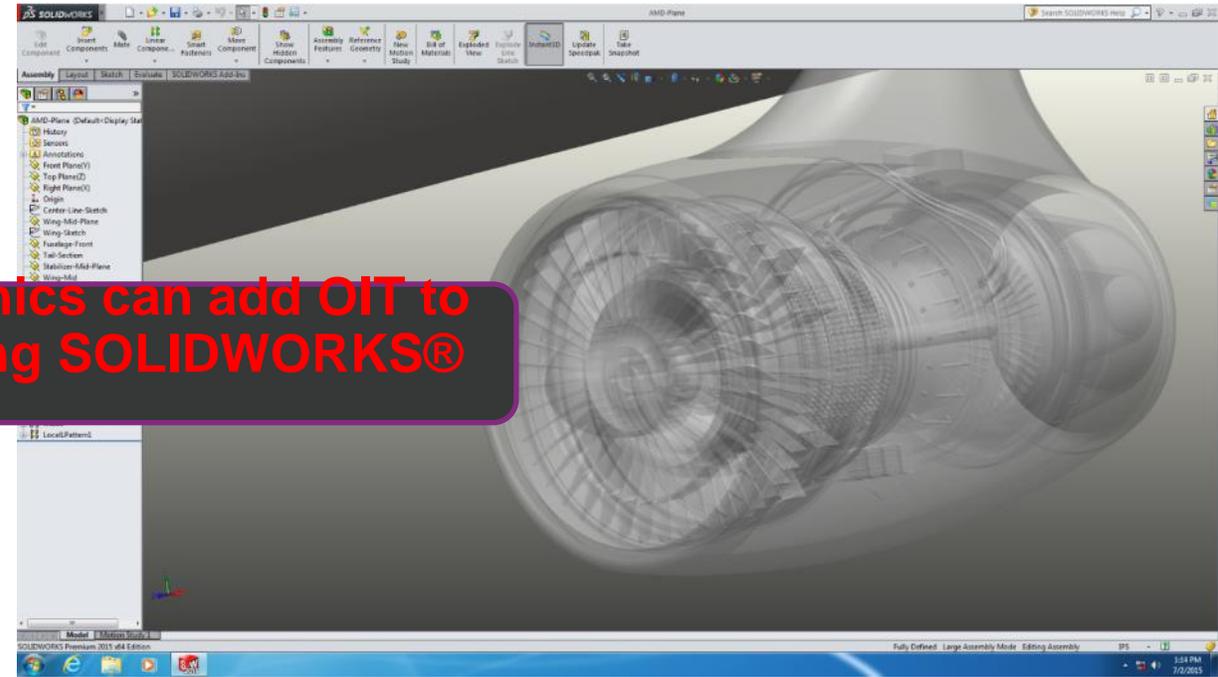
TRANSPARENCY (OIT)

AMD FirePro W2100 vs. Intel HD Graphics

P4600



Only AMD FirePro W2100 graphics can add OIT to entry-level workstations running SOLIDWORKS® 2015/2016!



AMD FirePro W2100 – OIT fully supported!

(AMD FirePro W4x00-W9100 – OIT fully supported!)

Intel HD Graphics P4600 (IGP) – no OIT!
(Intel Consumer IGP (uncertified) – no OIT!)
(NV Quadro K420/K620 – no OIT!)

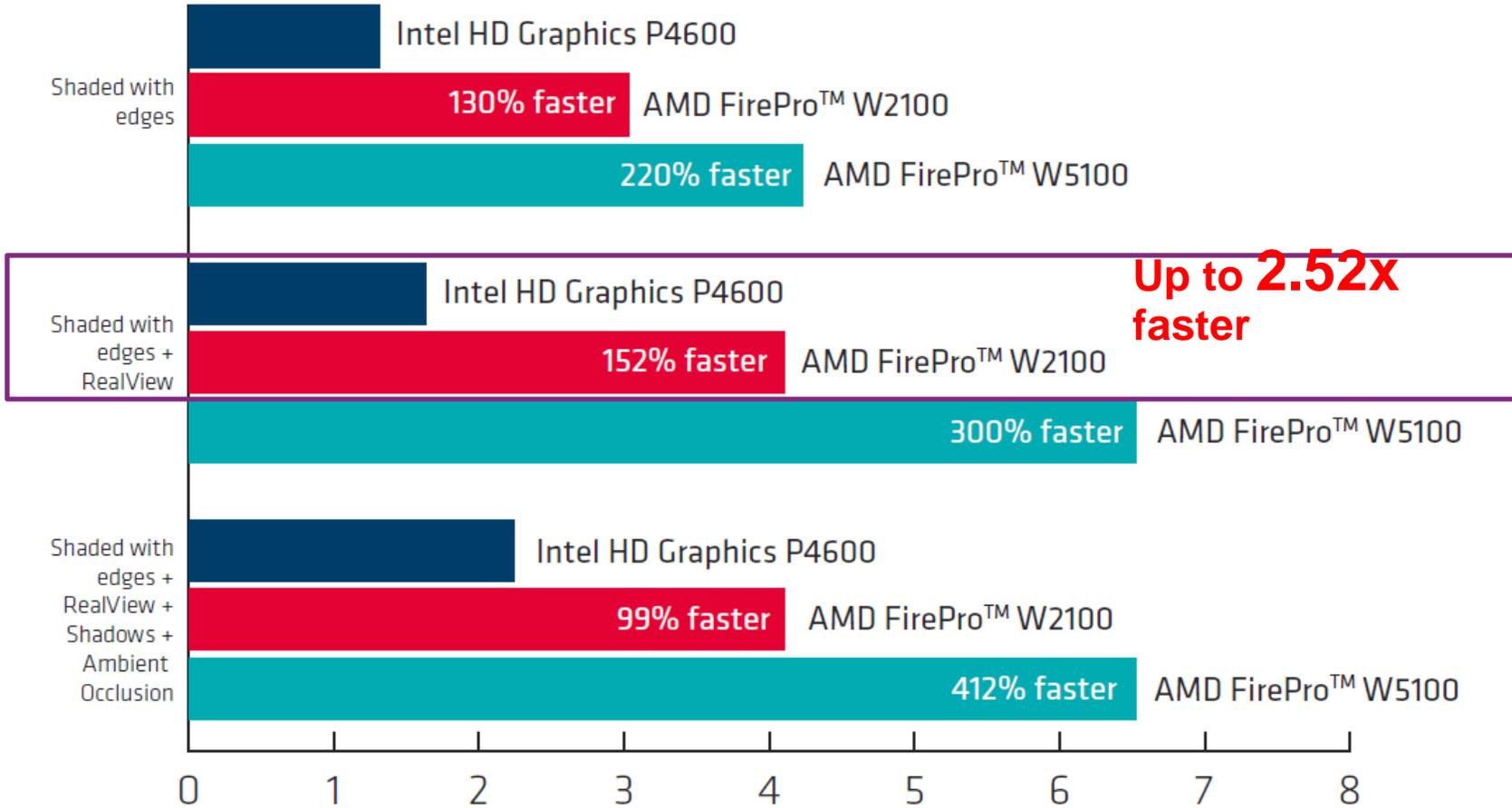


Images courtesy of Develop3D

SOLIDWORKS® 2015 Benchmark with Full-Scene Anti-Aliasing

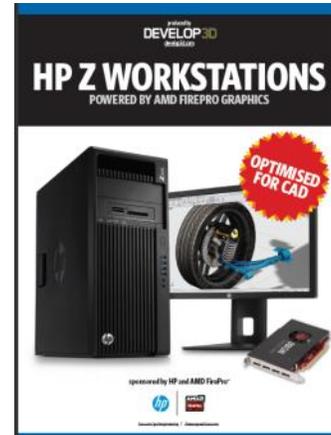


Shaded with Edges / Shaded with Edges + RealView /
Shaded with Edges + RealView + Shadows + Ambient Occlusion



Up to 2.52x faster

The AMD FirePro™ W2100 graphics card outperforms the Intel HD Graphics P4600 by up to 2.52x



Based on comparison of AMD FirePro W2100 and W5100 graphics cards and Intel HD Graphics P4600 running internal DEVELOP3D SOLIDWORKS 2015 benchmark. With Full Scene Anti Aliasing (FSAA) and 'shaded with edges' mode, Intel P4600 score of 1.32, versus AMD FirePro W2100 and W5100 test systems scores of 3.03 (130% better) and 4.23 (220% better) respectively; in 'shaded with edges + RealView' mode, Intel P4600 score of 1.63, versus AMD FirePro W2100 and W5100 test systems scores of 4.10 (152% better) and 6.52 (300% better) respectively; and in 'shaded with edges + RealView + Shadows + Ambient Occlusion' mode, Intel P4600 score of 2.42, versus AMD FirePro W2100 and W5100 test systems scores of 4.82 (99% better) and 12.40 (412% better) respectively. Test system configuration: HP Z230 workstation, Intel® Xeon® E3-1245 v3 at 3.4GHz (four cores), 32GB RAM, Windows 7 64-bit SP1, SOLIDWORKS 2015 SP2. AMD FirePro driver: 14.502.1032. Intel HD Graphics driver: 10.18.10.3960. Tests were run July 2015 by DEVELOP3D. FP-160



HP Z240

By adding the **AMD FirePro W2100** graphics card to an **HP Z240 SFF or Tower** workstation with integrated graphics (or to a PC), **SOLIDWORKS®** users can take advantage of up to **2.52x faster performance** and also get to use the **new GPU-accelerated OIT** mode which helps to more easily perceive the depth and the relative position of parts in an assembly.



or

Integrated Graphics

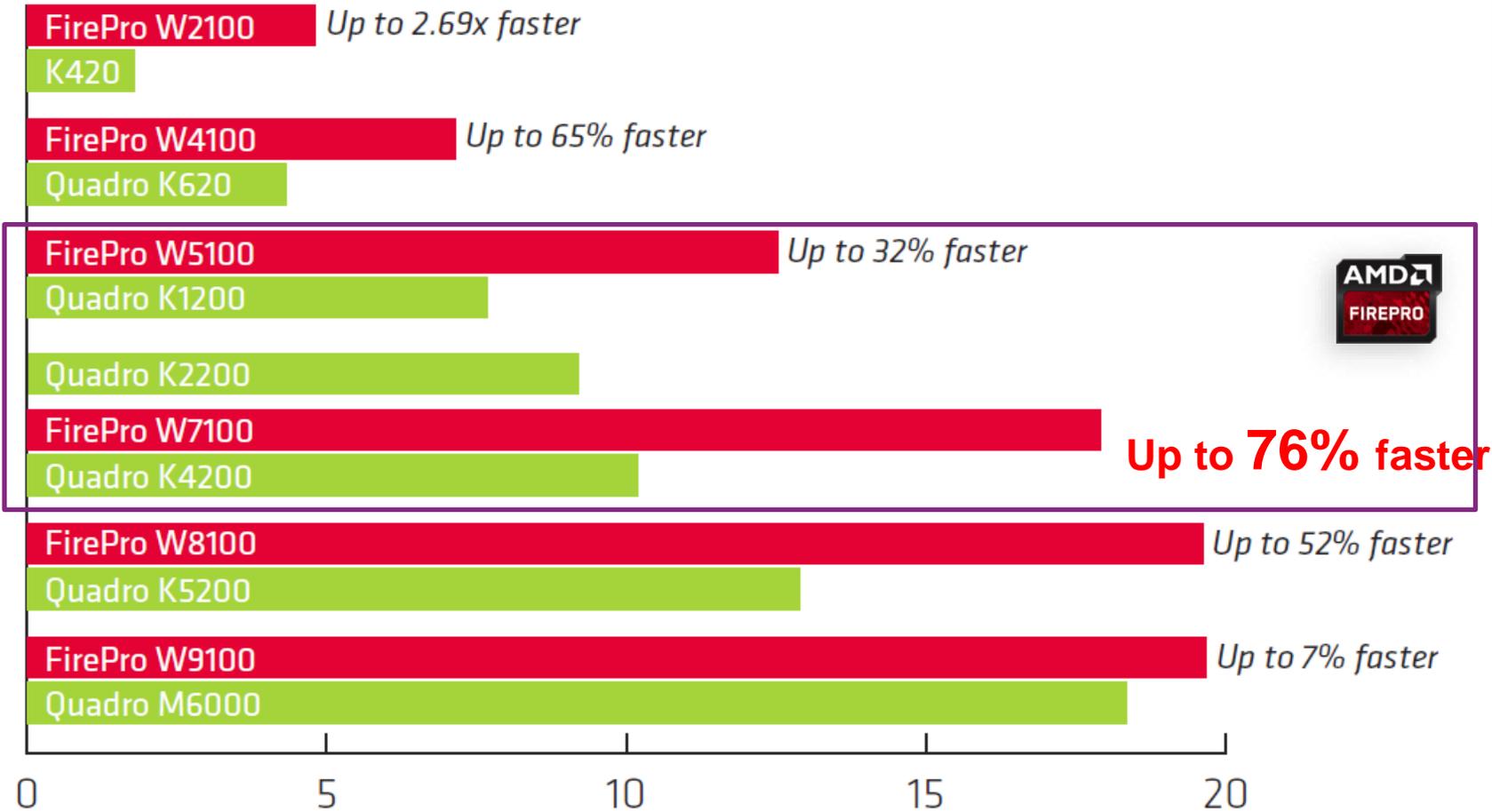
OIT	Performance	
✘	1	No OIT
☑	2.5	OIT and up to 2.5x faster

AMD FirePro W2100



SPECapc SOLIDWORKS® 2015 Benchmark with RealView®

Shaded with Edges + RealView + Shadows + Ambient Occlusion Graphics Sub-composite



In AMD internal testing using SPECapc for SOLIDWORKS® 2015 application with Full Scene Anti Aliasing (FSAA), Shaded with Edges using RealView® and Shadows and Ambient Occlusion Graphics sub-composite, the AMD FirePro-based test system achieved scores as follows: W2100=4.82, W4100=7.15, W5100=12.52, W7100=17.92, W8100=19.62, W9100=19.67; compared to the Nvidia Quadro-based test system scores of K420=1.79*, K620=4.32*, K1200=7.67, K2200=9.18, K4200=10.18, K5200=12.88, M6000=18.34 (*these products do not support Order Independent Transparency, so test results run in blended mode, scores are for reference only). AMD lab test system configuration: Intel E5-1660 3.3GHz, 16GB RAM, Windows 7 64bit SP1, AMD driver 14.502.1019 / Nvidia 347.88/353.06. FP-159



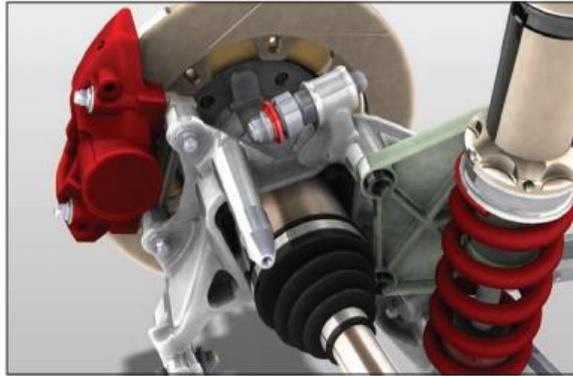
Video on AMD FirePro W4100 vs Radeon R9 285

- This is a very simple and compelling demonstration of the performance advantage of a professional AMD FirePro W4100 GPU (\$159 on newegg) vs a similarly priced, but consumer Radeon R9285 GPU (\$209 on newegg)for SOLIDWORKS. And this is just simple FPS. Now add on other SOLIDWORKS [specific optimizations](#) for FirePro cards, and you have a pretty compelling reason to go FirePro.
- <http://bit.ly/AMDFireProVideo>
- The numbers in the bottom right of the viewport are the fraps recording the framerate

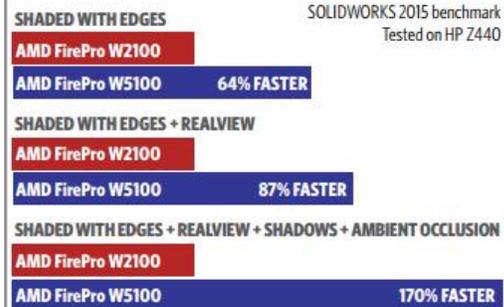


HP Desktop systems and AMD FirePro Card recommendations

Used extensively in the design of industrial machinery, consumer products, and medical devices SOLIDWORKS demands powerful workstation hardware that can handle complex assemblies with an emphasis on aesthetics



Relative performance in SOLIDWORKS 2015 (bigger is better)²



REALVIEW & AMBIENT OCCLUSION

SOLIDWORKS RealView brings models to life through advanced real time shading. Ambient Occlusion (AO) further increases the realism of viewport models by better simulating real world lighting.

A professional GPU is required to enable RealView and AO and as both technologies put a significant load on the GPU, models will rotate more smoothly with more powerful GPUs. See chart left for performance comparison of GPUs.

RECOMMENDED SPEC FOR SOLIDWORKS CAD WORKFLOWS

HP Z WORKSTATION

HP Z440 single CPU desktop workstation

PROCESSOR (CPU)

Intel® Xeon® E5-1630 v3 (3.7GHz) (4 core)
Intel® Xeon® E5-1620 v3 (3.5GHz) (4 core)

MEMORY (RAM)

16GB (for mainstream assemblies)
24GB (for large assembly modelling)

STORAGE (CPU)

256GB SATA Solid State Drive (SSD)
or 256GB HP Z Turbo Drive G2 SSD for
Windows 7 64-bit operating system,
SOLIDWORKS and supporting applications
+ 2TB SATA Hard Disk Drive for data.

GRAPHICS CARD (GPU)

AMD FirePro W2100 (2GB) for entry-level
part and assembly modelling.
AMD FirePro W5100 (2GB) for complex

assemblies, and with RealView or
Ambient Occlusion enabled (see above).
Both GPUs are certified and optimised for
SOLIDWORKS for performance and stability.

ADVANCED USERS

For CAD and SOLIDWORKS Simulation
Intel® Xeon® E5-1650 v3 (3.5GHz) (6 cores).
For CAD and SOLIDWORKS PhotoView
360 (ray trace rendering)
Intel® Xeon® E5-1680 v3 (3.2GHz) (8 cores).

The AMD FirePro W2100 is
ideal for entry-level part and
assembly modelling



HP ZBOOK Recommendations

AN HP ZBOOK WORKSTATION TO MATCH ALL NEEDS



	HP ZBook 14 G2 The world's first workstation Ultrabook and HP's lightest mobile workstation. Thin and customisable with 14-inch diagonal display.	HP ZBook 15u G2 Slimline workstation Ultrabook with 15.6-inch diagonal FHD display. Designed for highly portable CAD.	HP ZBook 15 G2 Mobile workstation redesigned for productivity on the go. Features optional 15.6-inch diagonal QHD+ display (3200 x 1800).	HP ZBook 17 G2 HP's most powerful mobile workstation with incredible expandability and an optional 17.3-inch diagonal DreamColor display.
Operating System	Windows 8.1 Pro 64-bit Windows 7 Professional ⁴	Windows 8.1 Pro 64-bit Windows 7 Professional ⁴	Windows 8.1 Pro 64-bit Windows 7 Professional ⁴	Windows 8.1 Pro 64-bit Windows 7 Professional ⁴
Processor	Dual-core 5th generation Intel® Core™ i5 and i7 processors ⁵	Dual-core 5th generation Intel® Core™ i5 and i7 processors ⁵	Dual- and quad-core 4th generation Intel® Core™ i5 and i7 processors ⁵	Dual- and quad-core 4th generation Intel® Core™ i5 and i7 processors ⁵
Memory	DDR3L SDRAM, 1600 MHz, 2 SODIMMs, up to 16 GB	DDR3L SDRAM, 1600 MHz, 2 SODIMMs, up to 16 GB	DDR3L SDRAM, 1600 MHz, 2 or 4 SODIMMs, up to 32 GB	DDR3L SDRAM, 1600 MHz, 2 or 4 SODIMMs, up to 32 GB
AMD FirePro GPU	AMD FirePro™ M4150 (1GB GDDR5)	AMD FirePro™ M4170 (1GB GDDR5)	AMD FirePro™ M5100 (2GB GDDR5)	AMD FirePro™ M6100 (2GB GDDR5)
Display	14" diagonal LED-backlit (1366x768) or (1600x900) or IPS UWVA* (1920x1080) with/without touch	15.6-inch diagonal LED-backlit anti-glare FHD (1920x1080) (TN or IPS with ultra-wide viewing angle).	15.6-inch diagonal FHD (1920x1080, AG/SVA) or QHD+ (3200x1800, AG/UWVA*)	17.3" diagonal HD+ (1600x900, AG/SVA), FHD (1920x1080, AG/WVA), FHD DreamColor (1920x1080, AG/UWVA*)
Storage	Up to two drives: 256 GB HP Z Turbo Drive (PCIe SSD) and/or SATA HDD (up to 1 TB) or SSD (up to 512 GB) ⁶	Up to two drives: 256 GB HP Z Turbo Drive (PCIe SSD) and/or SATA HDD (up to 1 TB) or SSD (up to 512 GB) ⁶	Up to three drives: 256GB HP Z Turbo Drive (PCIe SSD) and/or up to 2 SATA HDD (up to 1TB) or SSD (up to 512GB) ⁶	Up to four drives: 256GB HP Z Turbo Drive (PCIe SSD) and/or up to 3 SATA HDD (up to 1TB) or SSD (up to 512GB) ⁶
Dimensions + weight	339 x 237 x 21 mm (13.35 x 9.33 x 0.83 in) From 1.71 kg (3.77 lb)	375.5 x 253.6 x 21.42 mm (14.78 x 9.98 x 0.84 in) From 1.91kg (4.23 lb)	381.5 x 257 x 30.5 mm (15 x 10.1 x 1.2 in) From 2.82kg (6.20lb)	416 x 272 x 34 mm (16.37 x 10.7 x 1.33 in) From 3.36kg (7.42 lb)

*UWVA = Ultra Wide Viewing Angle



Q&A

Submit your question using the Questions panel on the right side of the GoToWebinar interface.

Questions not addressed during the presentation will be answered directly after the event.

Panelists

Kurt Anliker (SOLIDWORKS)

Rob Jamieson (AMD)

Ralph Rocco (HP)



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