



Ansys Fluent & Mechanical 2026R1 GPU Benchmarks

Ted Sperry Ph.D. - Application Engineer, DRD

Gabriel Prado - Application Engineer, DRD

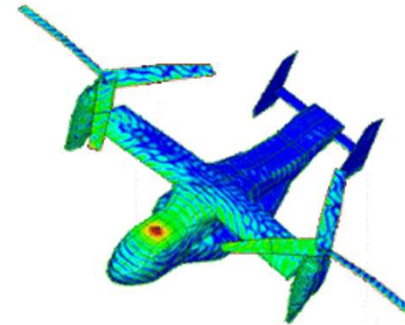
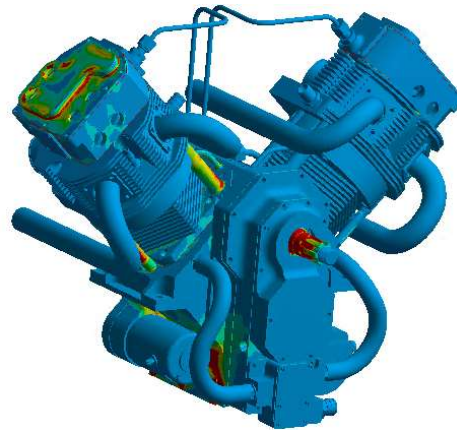
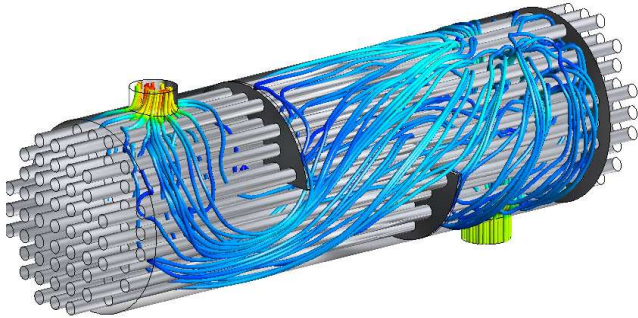
July 23, 2026

Agenda

- Introduction to DRD Technology
- Overview of Exxact Corporation
- Review of Ansys HPC Licensing for Fluent CFD
- Benchmarks and Discussion for Fluent
- Benchmarks for Ansys Mechanical
- Time for Questions

Mission Statement

DRD Technology helps engineering teams accelerate product development. With in-house expertise spanning the entire range of physics, we ensure customers succeed when using Ansys simulation tools for virtual prototyping and design verification.



Ansys

CERTIFIED ELITE CHANNEL PARTNER

July 24, 2026

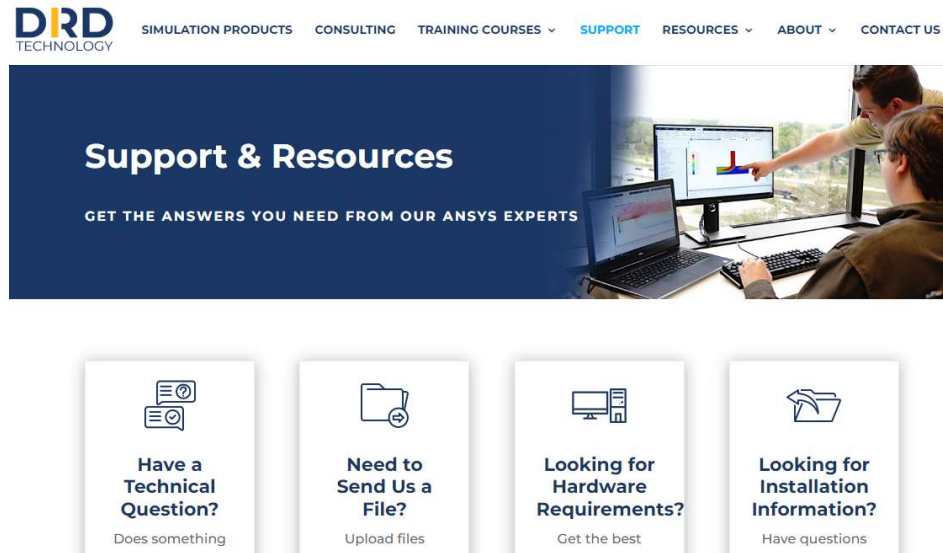
3

DRD

DRD Ansys Technical Support

Support:
(918) 743-3013 x1
support@drd.com

Or through our website at
www.drd.com



For more than five years, I have worked closely with DRD Technology to execute tactical and strategic initiatives here at EaglePicher due to our unprecedented growth. We've been very happy with DRD and will continue to work with them as our business partner for using Ansys tools effectively and efficiently.

- Doug Austin
Director of Research and Development

EaglePicher™
Technologies, LLC

Overview of Exxact Corporation



Established in 1992, Exxact is an industry-leading hardware distributor, service provider, and systems integrator for HPC solutions. They help evaluate, build, and integrate turnkey workstations, servers, and clusters from start to finish.

Market Focus:

- Artificial Intelligence Training & Inference
- Molecular Dynamics & Life Science Research
- Manufacturing & Product Design
- Engineering & Fluids Simulation

Custom HPC Systems

Every workload is unique so, Exxact delivers, fully customizable, workstations, servers, and clusters built to power your research, your discovery, and your innovation.

Modern Hardware

Our partnerships allow us to stock the newest technology, hardware, and components while offering a full range of services to ensure you are satisfied with your Exxact system.

End to End Services

Our goal is to make HPC accessible. Every Exxact system is built to order, stress tested, validated, and preconfigured to deliver a fully turnkey solution that is ready to go right out of the box.

Master Your Simulation Workload

Start configuring today.



Single CPU, Dual GPU Desktop Workstations



Dual CPU, Quad GPU Rack-mountable Workstations



Purpose Built Rack Scale HPC Clusters

Why GPUs Over CPUs?



Time

CPUs handle tasks sequentially resulting in those long simulation times. GPUs utilize parallel processing to accelerate simulation run time meaning you can run more iterations or complete workloads faster.



Complexity

Long simulation times on CPUs requiring simplified models to fit the project timeline. GPU speedups allow engineers to retain complexity and complete simulations with time to spare.



Budget

A single GPU compute node can have equivalent performance as a multi-CPU node with hundreds of cores. Utilizing GPUs not only saves time, but also saves money with opportunity for scale.



Contact us today

Web	www.exxactcorp.com
Phone	510-226-7366
Email	sales@exxactcorp.com
Address	46211 Landing Pwky, Fremont CA, 94538



Review of Ansys HPC Licensing for Ansys Fluent GPU Solver

July 24, 2026

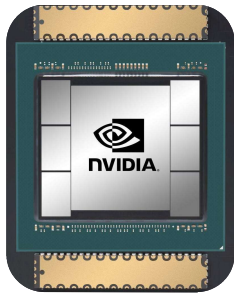
10

DRD

Ansys HPC Licenses for Fluent CFD

- Ansys HPC licenses significantly speeds up Ansys solutions.
- HPC licenses are required to use more than 4 cores, or to access additional GPU resources with more computing power.
- The Ansys solver licenses provide access to 4 cores and access to GPU resources (40 SM/CUs) – will explain this in more detail later.
- Unlike CPUs, GPUs **cannot** be partially utilized (e.g. running on 4 of 12 CPU Cores)
- HPC License types:
 - HPC Packs
 - HPC licenses in a Workgroup
 - CFD HPC Ultimate

Fluent GPU Solver HPC Consumption



Comprised of streaming multiprocessors (SMs) that contain CUDA cores



Comprised of compute units (CUs) that contain stream processors

# GCUs/SMs	HPC Workgroup	HPC Packs
1 – 40	0	0
41 – 48	1 – 8	1
49 – 72	9 – 32	2
73 – 168	33 – 128	3
169 – 552	129 – 512	4
553 – 2088	513 – 2048	5

Like cores on CPU, GPUs are licensed by quantity of SMs/GCs which are interchangeable units.

CFD Enterprise allows up to 40 GCUs

- HPC licensing required for more GCUs

Unlike CPUs, GPUs cannot be partially utilized

- Must have licensing for entirety of GPU

NVIDIA RTX A6000 has 84 SMs

Using 1 RTX A6000
Requires 44 HPC
($84 - 40 = 44$)
or 3 HPC Packs

Using 2 RTX A6000
Requires 128 HPC
($84 * 2 - 40 = 128$)
or 3 HPC Packs

HPC Licensing Paradigm (Packs)

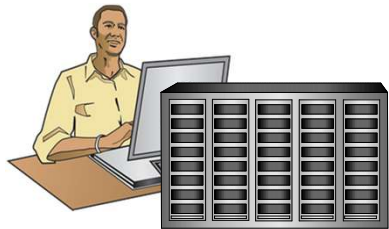
HPC Licensing for GPU/CPU is interchangeable; be aware that the solver's included 4 CPU Cores or 40 GPU SMs will cause an offset from the CPU based chart shown below.

For CPU Cores:

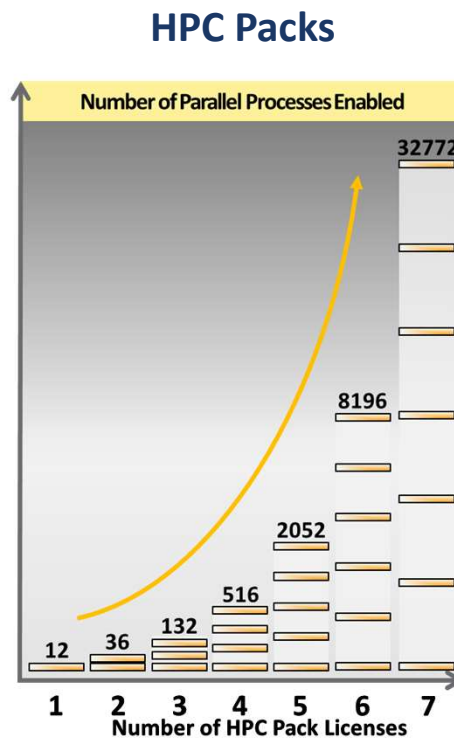
$$4 + (8 * 4^{h-1})$$

For GPU SMs:

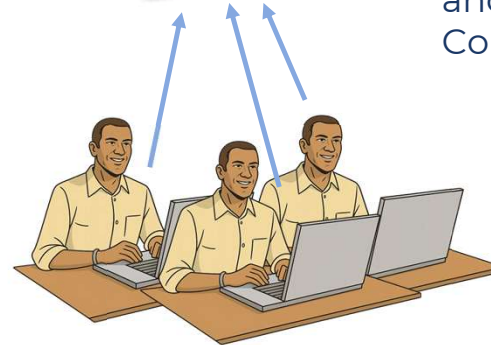
$$40 + (8 * 4^{h-1})$$



Stackable license for
doing large, single jobs



4 Packs



Scenario 1:

- 1 engineer checks out all 4 HPC Packs and solves with up to 516 CPU Cores

Scenario 2:

- 2 engineers check out 2 HPC Packs and each solves using up to 36 CPU Cores

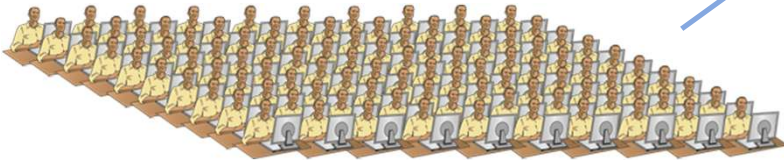
HPC Licensing Paradigm (Workgroups)

Workgroup licenses are more sharable, but function similarly for additional HPC resources

Bundle of additional cores that can be divided up among many users/solves

100 Individual Users

HPC Workgroup 64



Scenario 1:

- 64 engineers check out 1 HPC and solve with 5 cores
- 36 engineers get 0 HPC and solve with 4 cores.

Scenario 2:

- 1 engineer checks out 64 HPC and solves with 68 cores
- 99 engineers get 0 HPC and solve with 4 cores.

Scenario 3:

- 2 engineers check out 32 HPC and solve with 36 cores
- 98 engineers get 0 HPC and solve with 4 cores.

HPC Licensing Paradigm (CFD HPC Ultimate)

- All capabilities included in CFD Enterprise
- **Unlimited** CPU cores or GPUs without the need for additional HPC licensing
- Single task-based product
- For example:
 - A user can run one solve with 10,000 CPU cores or GPU SMs at a time without additional HPC licenses
- At a certain threshold, this becomes a better proposition than consuming many HPC Packs for large GPU hardware



Fluent GPU Solver Capabilities as of 2026R1

Fluent's GPU Solver enables significantly faster solve speeds, with capabilities expanding with each release as models are implemented from the CPU solver.

A high-level overview of currently supported models is shown below. For a comprehensive list of features and specific models, please refer to the Ansys release notes.

Flow & Turbulence

- Pressure-based flow solver
- RANS turbulence models
- LES and SBES models

Heat Transfer

- Conjugate heat transfer
- Temperature dependent material properties
- Radiation models

Rotating Machinery

- Multiple reference frame (MRF)

Multiphase

- Volume of Fluid (VOF) for free-surface flows
- VOF + Energy equation

Species & Reactions

- Species transport + volumetric reactions
- Finite-rate chemistry (subset)
- Flamelet Generated Manifold (FGM)

Discrete Phase Model (DPM)

- Particle tracking with flow coupling
- Droplet physics (breakup, evaporation)



Ansys Benchmark Data

Preface on GPU Hardware and Fluent Solver

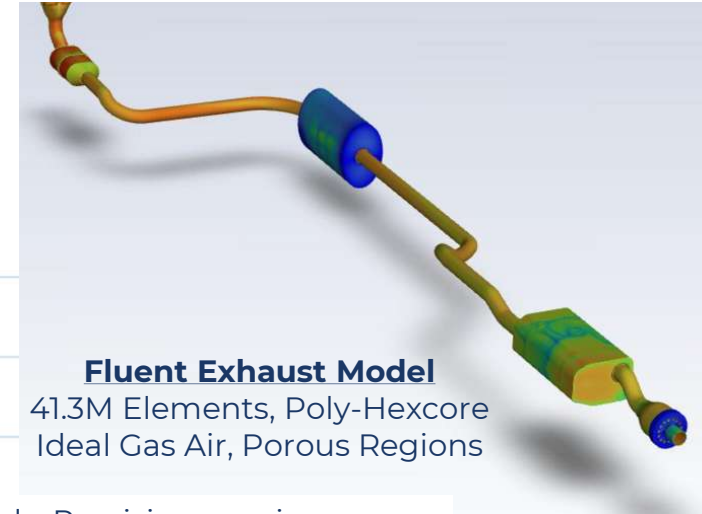
- Fluent's GPU is purpose-built for modern GPU architectures
- The GPU-optimized algorithms can dramatically reduce solution times
- GPU Memory capacity is one of the most important differentiators between GPU Models for running CFD simulations
- Larger-memory GPUs enable larger models, and typically better performance*
- While many models are already available in the GPU Solver, it is recommended to check specifics to ensure compatibility – DRD can help with this process.

GPU Model	Memory	SMs
RTX PRO 5000 Blackwell	48 GB (GDDR7)	110
RTX PRO 6000 Blackwell	96 GB (GDDR7)	188
Nvidia H200 NVL	141 GB (HBM3e)	132

Ansys Fluent 2026 GPU Benchmarks

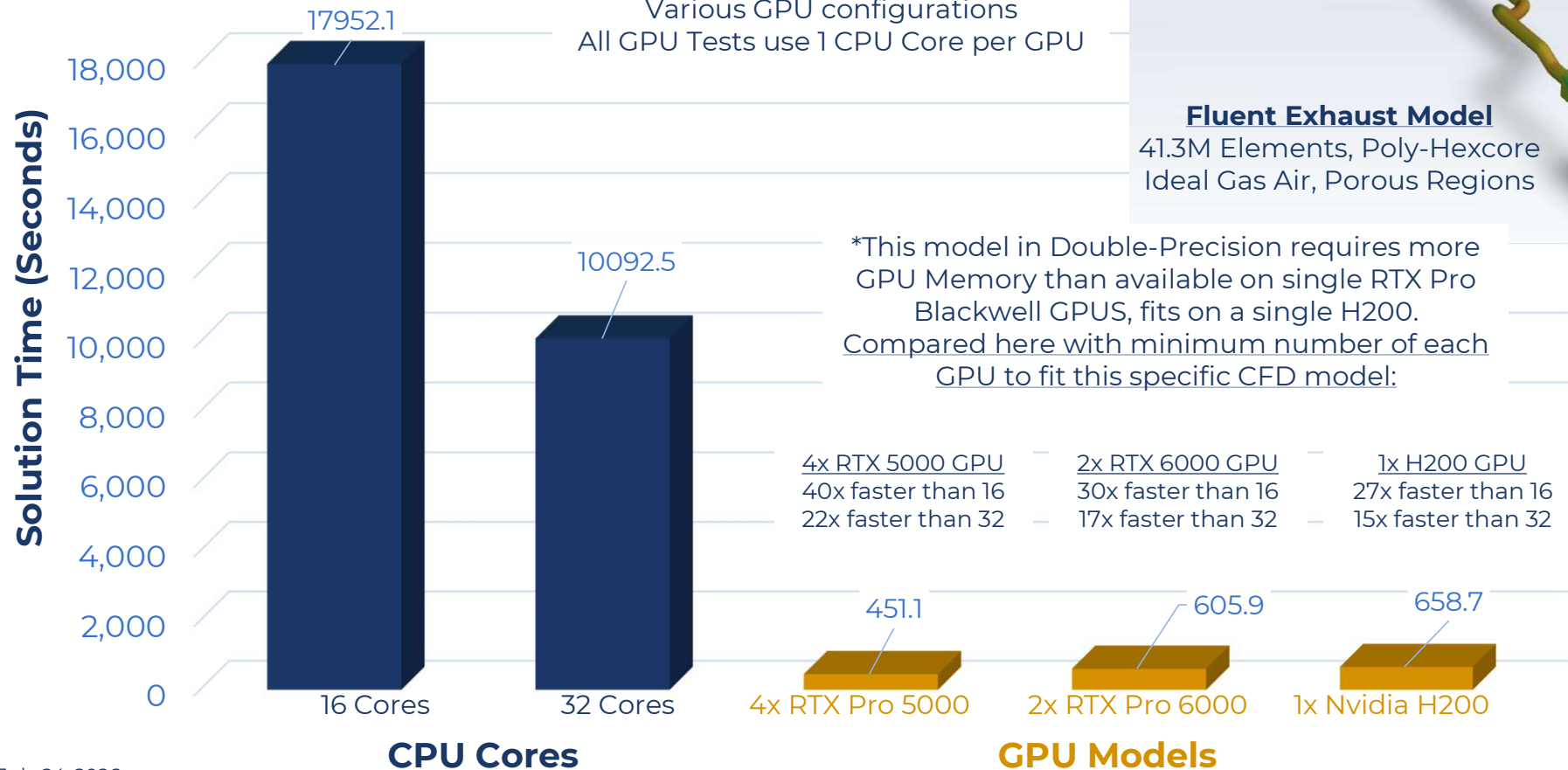
Workstation

AMD EPYC 9135 16-core Processors (2x)
Various GPU configurations
All GPU Tests use 1 CPU Core per GPU



Fluent Exhaust Model

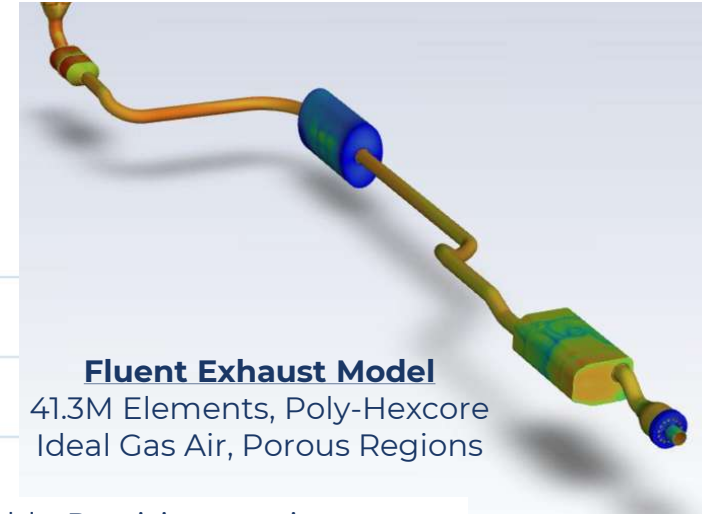
41.3M Elements, Poly-Hexcore
Ideal Gas Air, Porous Regions



Ansys Fluent 2026 GPU Benchmarks

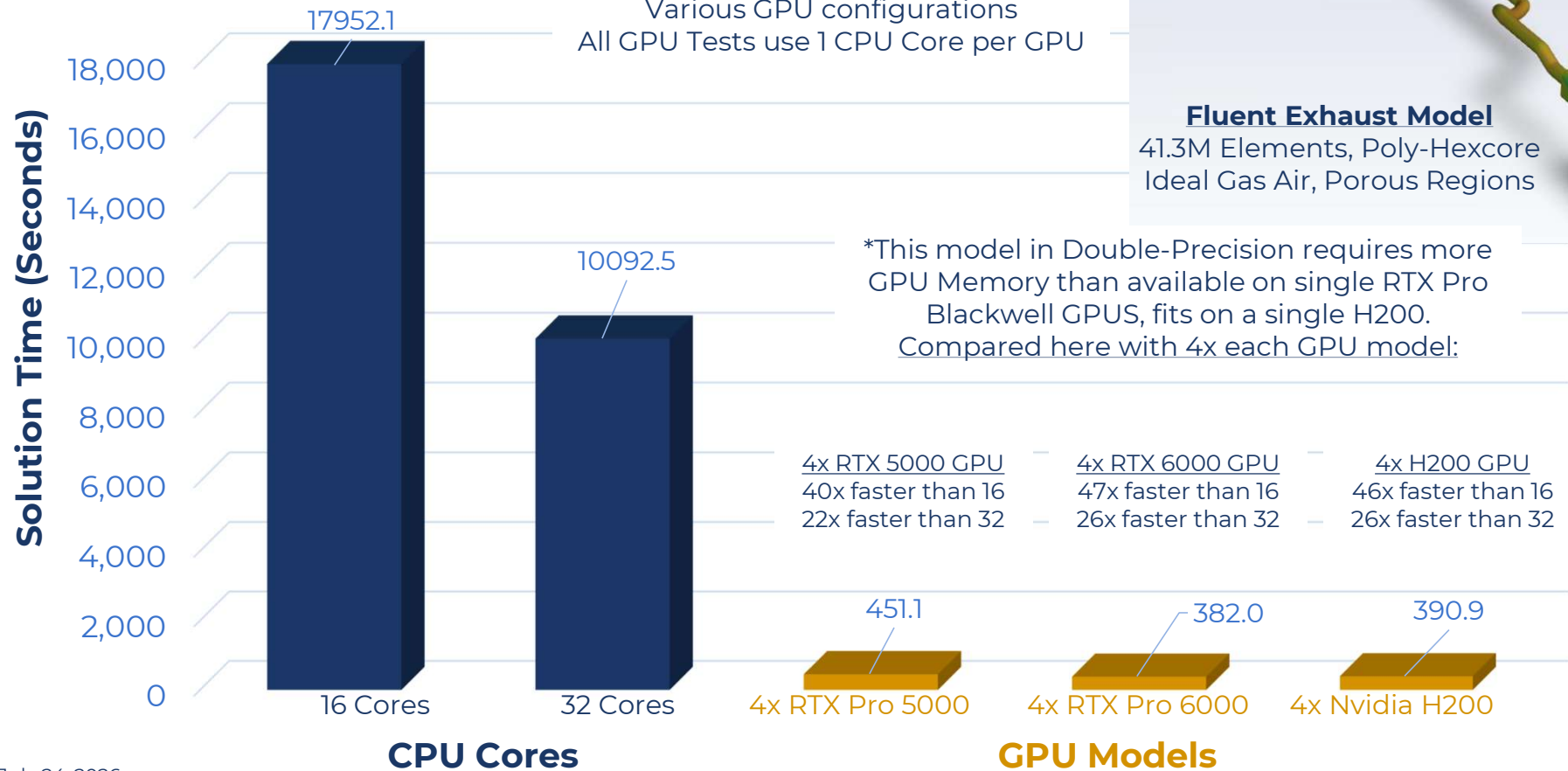
Workstation

AMD EPYC 9135 16-core Processors (2x)
Various GPU configurations
All GPU Tests use 1 CPU Core per GPU



Fluent Exhaust Model

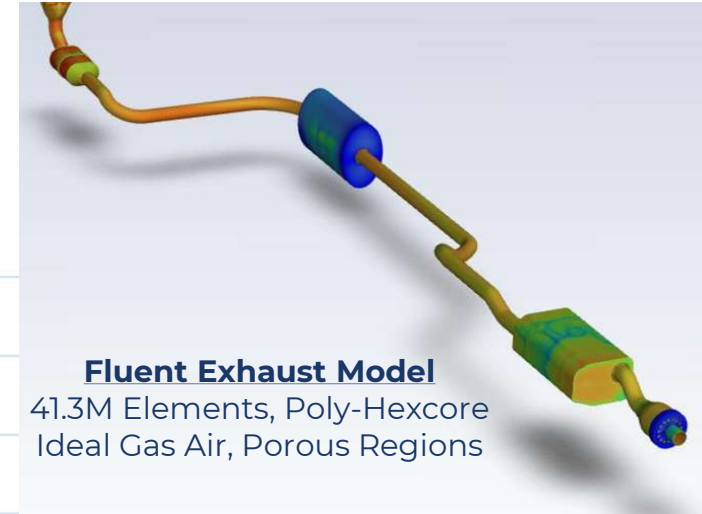
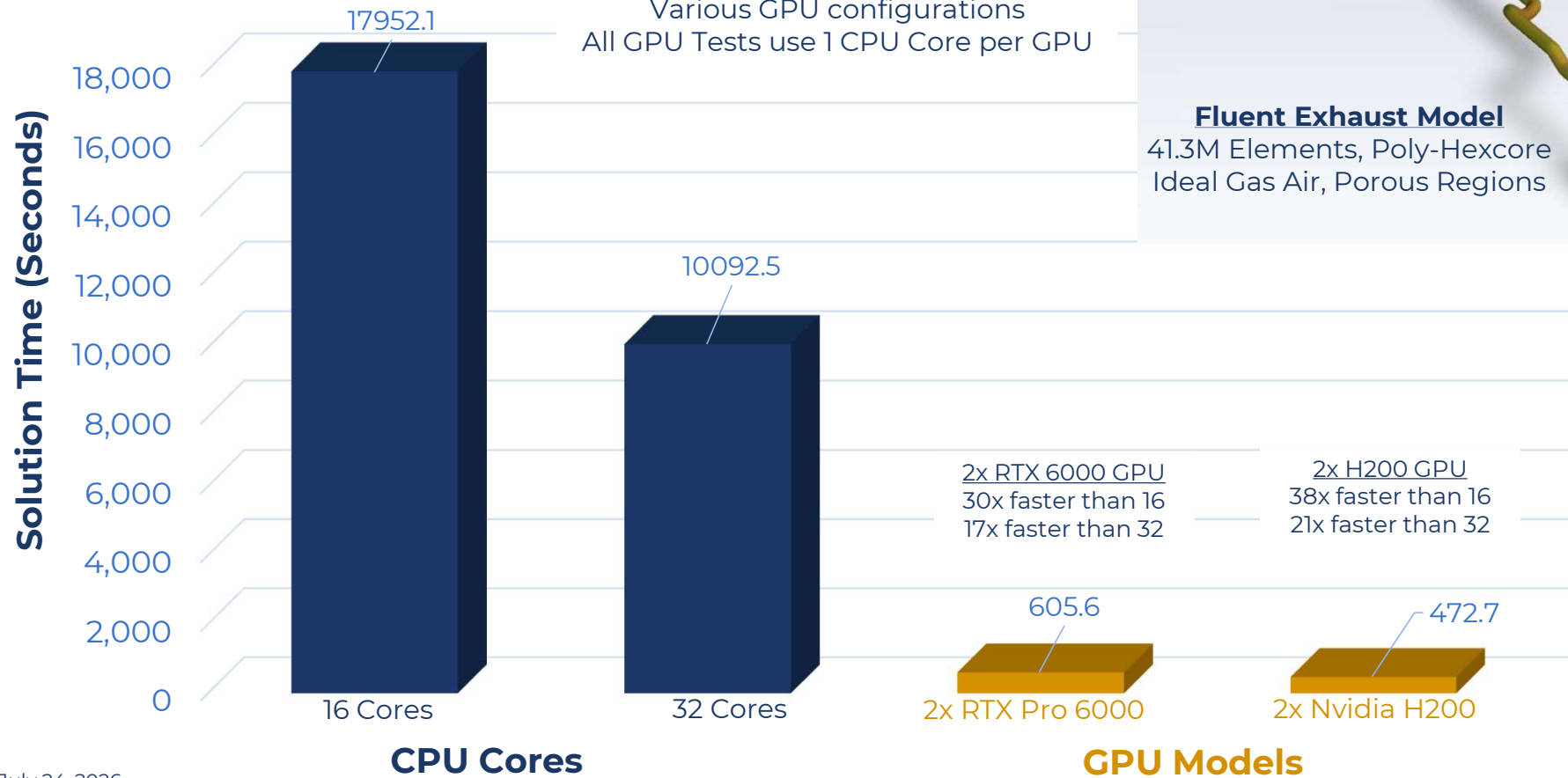
41.3M Elements, Poly-Hexcore
Ideal Gas Air, Porous Regions



Ansys Fluent 2026 GPU Benchmarks

Workstation

AMD EPYC 9135 16-core Processors (2x)
Various GPU configurations
All GPU Tests use 1 CPU Core per GPU



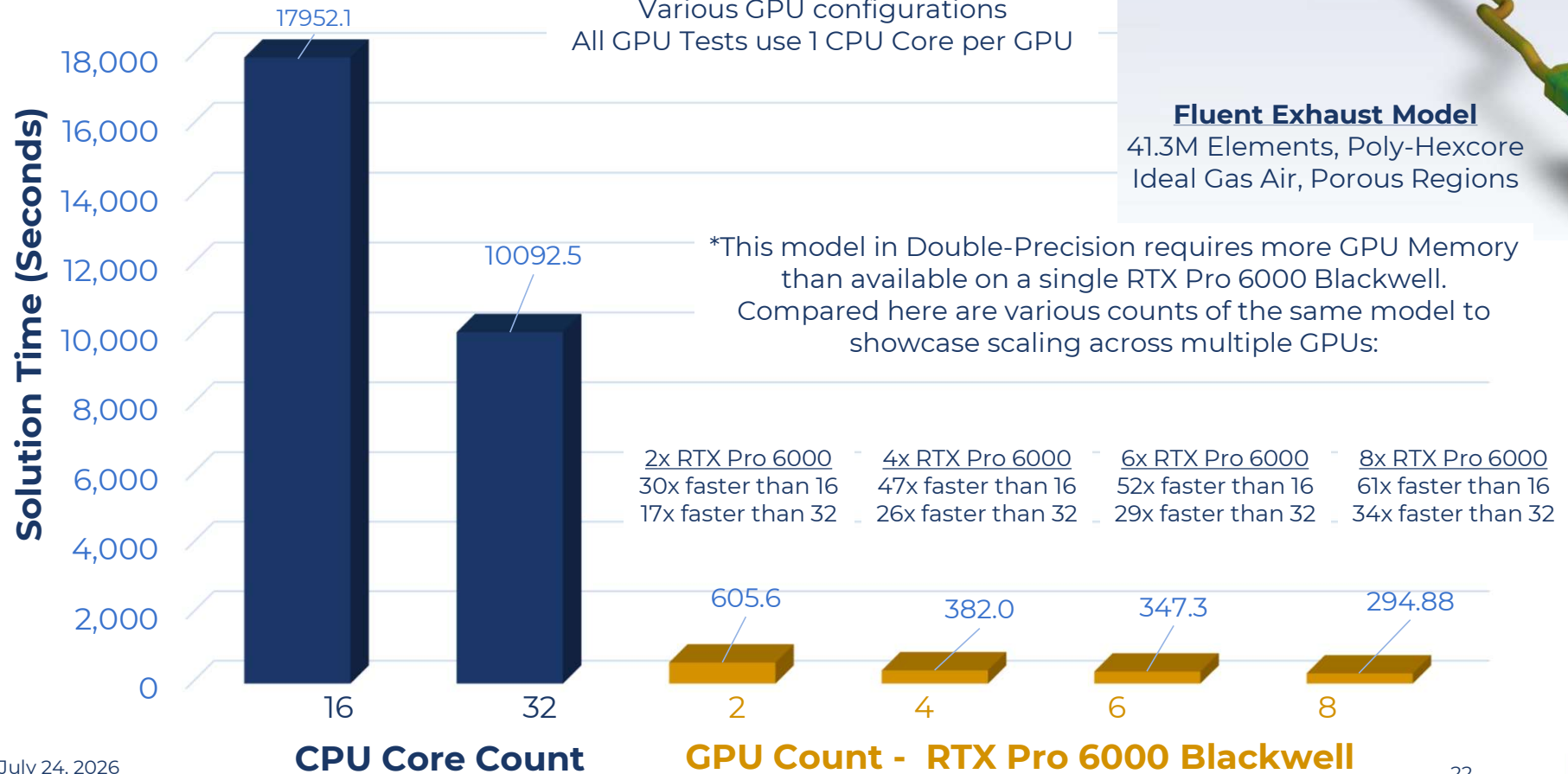
Ansys Fluent 2026 GPU Scaling

Workstation

AMD EPYC 9135 16-core Processors (2x)
Various GPU configurations
All GPU Tests use 1 CPU Core per GPU

Fluent Exhaust Model

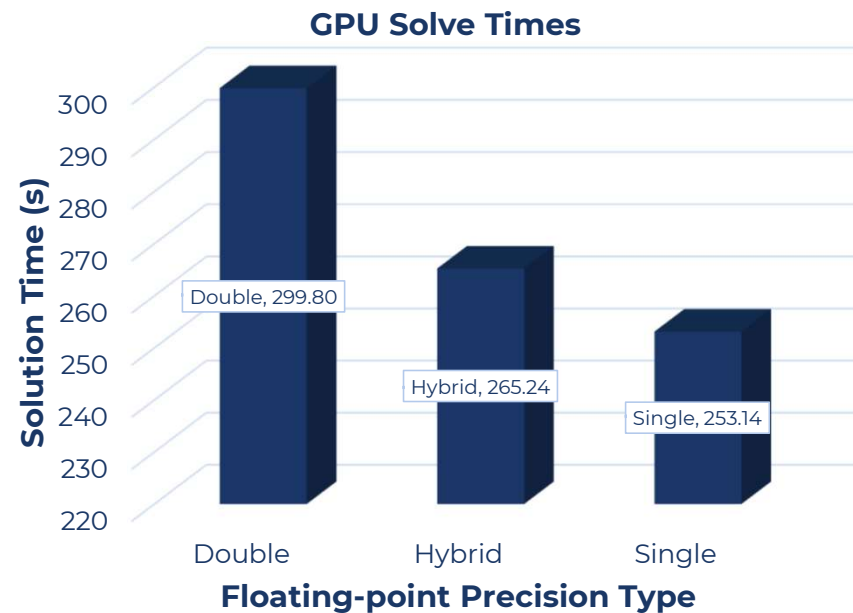
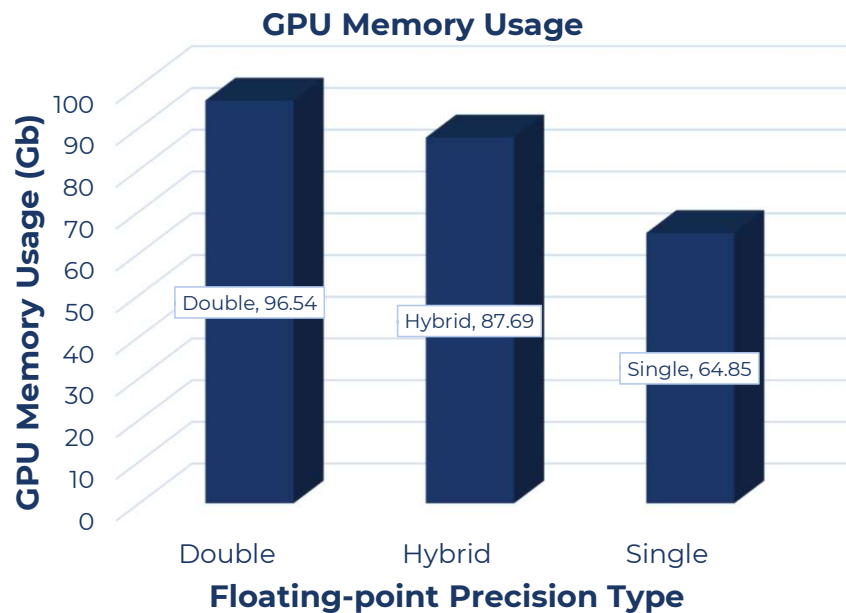
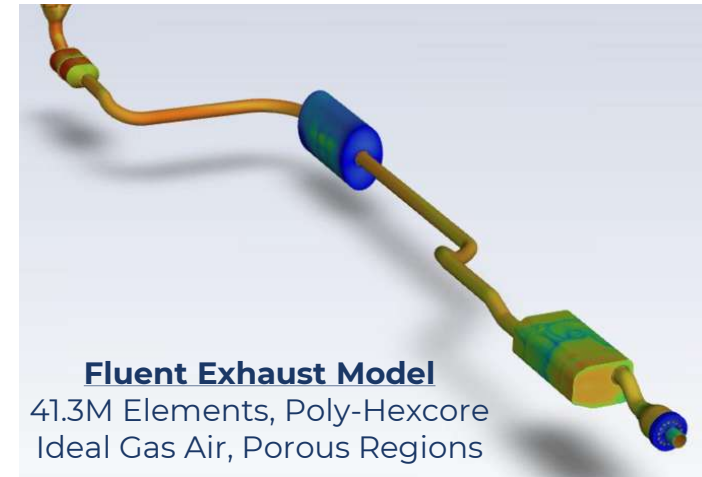
41.3M Elements, Poly-Hexcore
Ideal Gas Air, Porous Regions



Ansys Fluent 2026 GPU Precision

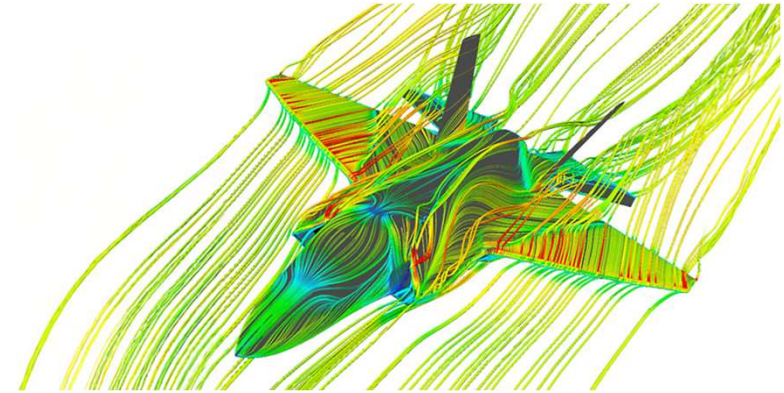
A new Hybrid Precision algorithm is available in Fluent to reduce memory consumption and solution times.

This is most useful for fitting larger models within memory limitations of existing GPU hardware.

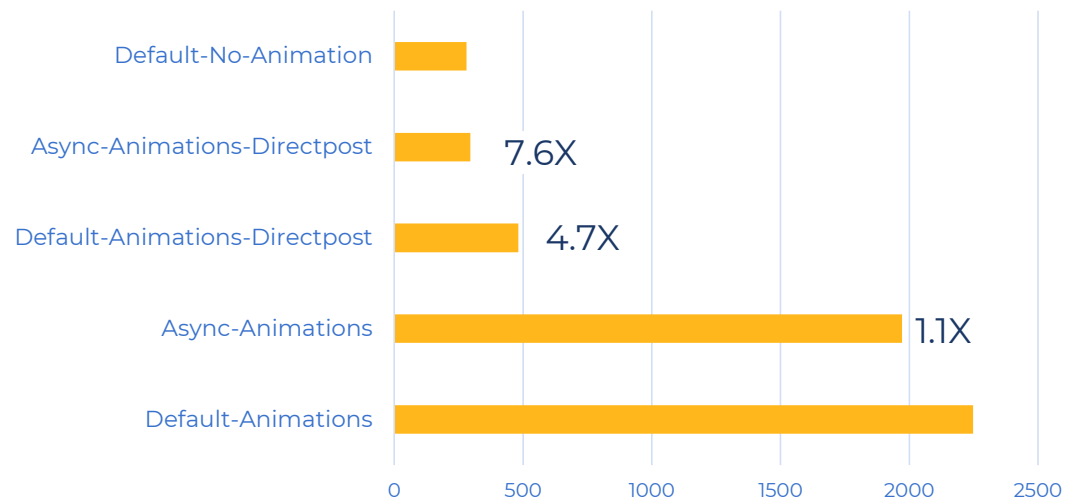


Asynchronous + Direct Post-Processing on GPU

- Speedup depends on the GPU/CPU load ratio
- Enhancements:
 - Minimize postprocessing overhead with async + Direct-post
 - Direct-post minimizes data transfer from GPU to CPU
 - One can now do animations without slowing down the simulation
- Use startup command `-gpu_async` to use this capability
- Limitations: Only default MPI supported, not OpenMPI/MS-MPI



NASA-CRM-Aircraft-20M case:
4 animations on boundary surfaces
3 animations on user-defined surfaces
1 frame every 10 iterations



Recommendations from Fluent GPU Benchmarks

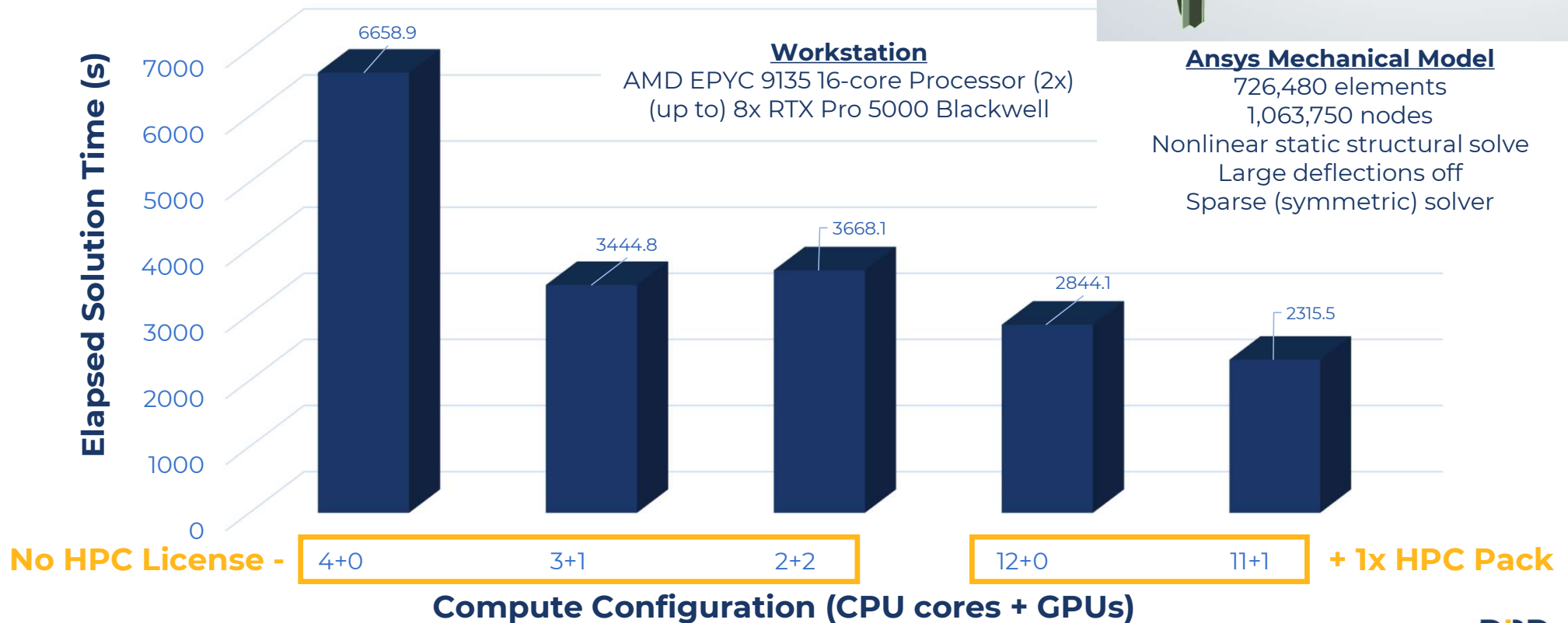
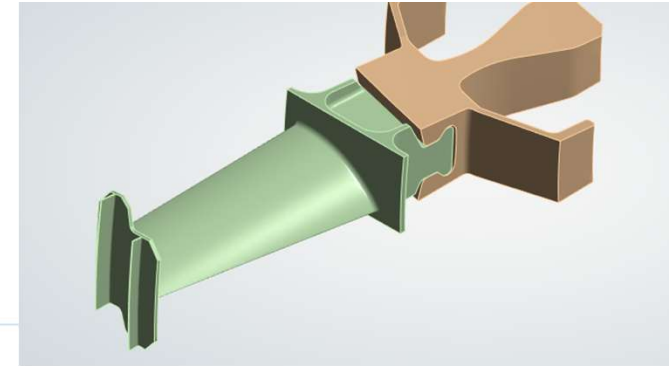
- The GPU Solver is significantly faster than the CPU Solver
- GPUs should be sized based on the mesh sizes and RAM requirements of your specific models
- Multi-GPU configurations can be used to distribute models across several GPUs
- While many models are already available in the GPU Solver, it is recommended to check specifics to ensure compatibility
- DRD is here to help with specific questions regarding model compatibility, licensing

Preface on Ansys Mechanical GPU Usage

- Mechanical uses GPU Offloading for the solver, rather than being a bespoke GPU-based solver algorithm as discussed for Fluent CFD
- For GPU offloading, no additional HPC licenses are required
- Instead, CPU Cores can be exchanged for use of GPU devices for offloading
- While the improvements shown on the next slide are significant, specific types of solves may vary in how much benefit is seen with GPU acceleration

Ansys Mechanical 2026R1 Benchmarks

Ansys Mechanical can exchange CPU cores to use GPU acceleration; results below compare compute configurations.



Conclusion

The recording for this webinar will be available in our Technical Resources Library.

If you have any questions or would like to be added to the mailing list for future webinars, please reach out to us at Support@DRD.com.



[SIMULATION PRODUCTS](#) [CONSULTING](#) [TRAINING COURSES](#) [SUPPORT](#) [RESOURCES](#) [ABOUT](#) [CONTACT US](#)

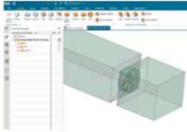
Technical Resources Library

IN-DEPTH RESOURCES TO ENHANCE YOUR SIMULATION SKILLS

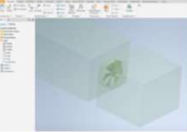




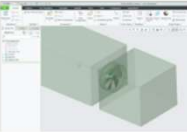
WHITE PAPER
Six Considerations for Selecting Engineering Simulation



WEBINAR
Full CAD Associativity Between NX and Ansys - (June 22, 2021)



WEBINAR
Full CAD Associativity Between Autodesk Inventor and Ansys



WEBINAR
Full CAD Associativity Between Creo Parametric and Ansys

Q&A

We have time for questions, please submit these in the webinar chat and we will address these in the order we receive them.

For any that we cannot answer during this session, we will follow up after this webinar has ended.

Any questions?