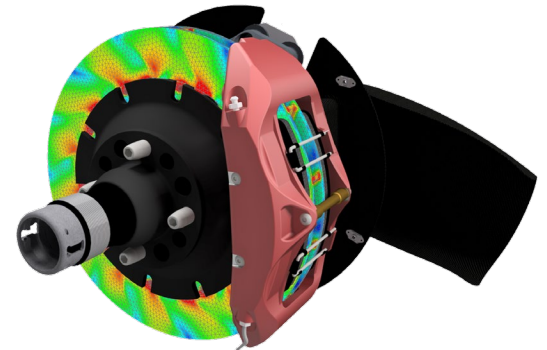
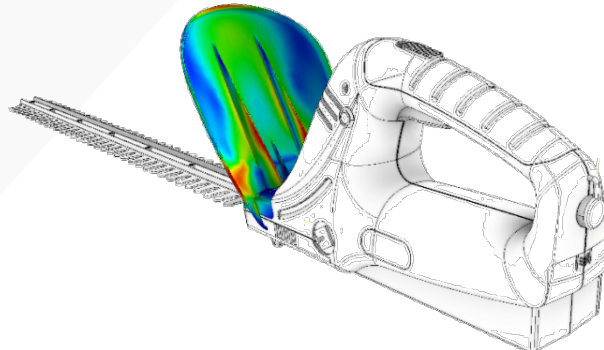
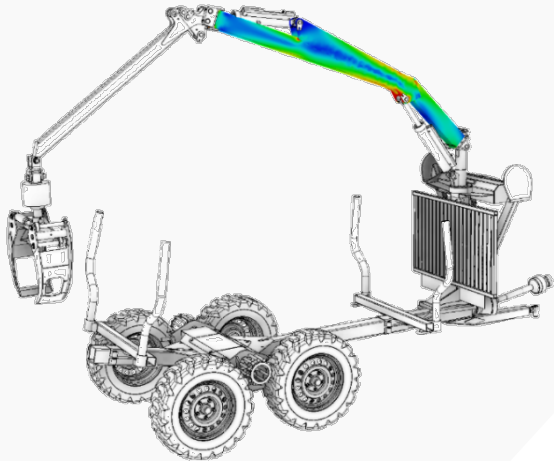


Simulation for Designers

Upfront Simulation

Wasim Younis
Simulation Manger



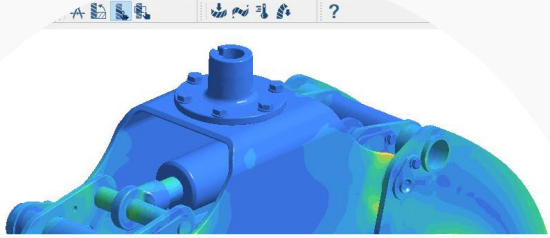
Something About Me



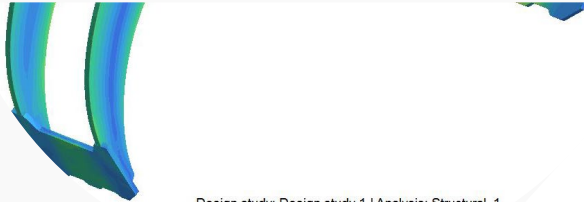
Wasim Younis

- Working at Symetri for over 10 Years as Simulation Specialist
- Experience with various Simulation Tools including, MSc, Ansys, Algor and Autodesk Simulation
- Author of Inventor and Nastran Simulation Books used by designers worldwide





AGENDA (45 mins)



Design study: Design study 1 | Analysis: Structural 1

1

Upfront Simulation

– Why simulate

2

Upfront Simulation Solutions

– Live Demonstration

3

Further Information

– How to Access including trials

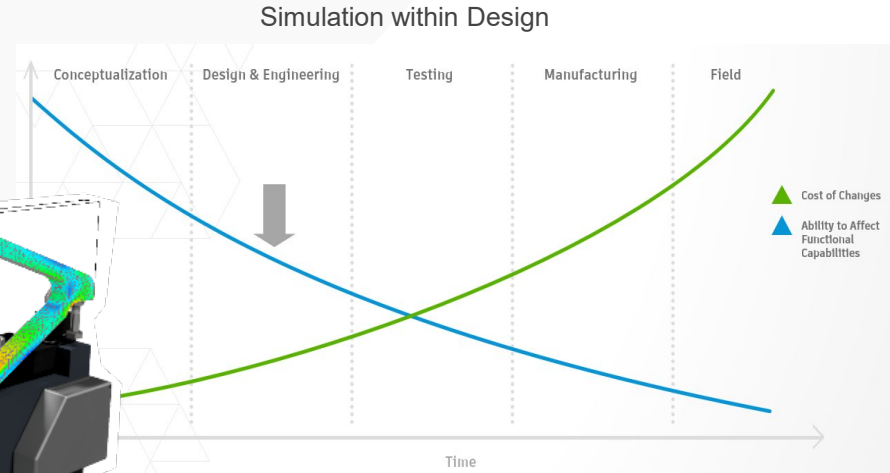
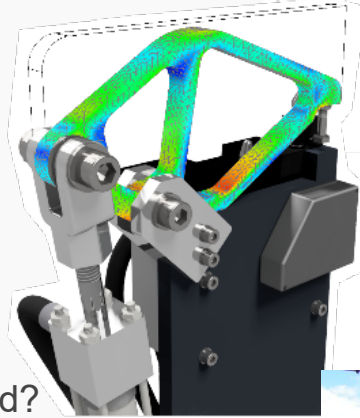
4

Q &A

– We are hoping to be in touch with everyone.

Simulation – WHY

- Validate designs earlier
- Cut costs due to failures in service
- Optimize material costs
- Design with confidence:
 - Will my Design fail?
 - What happens if it's dropped?
 - How light can I make it?
 - How strong does it need to be?
 - What if?



Simulation – CAN help you

- Reduce design and development times
- Avoid in field failures
- Innovate
- To be more confident in your designs



Upfront Simulation Solutions from Symetri

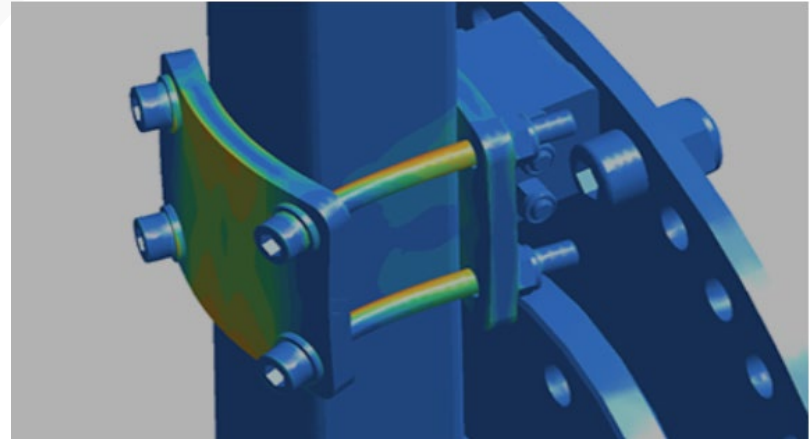
- Autodesk



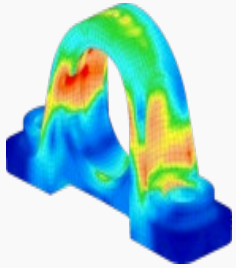
- Altair

Altair® SimSolid®

Structural Analysis for Rapid Design Iterations



Upfront Simulation Solutions from Symetri

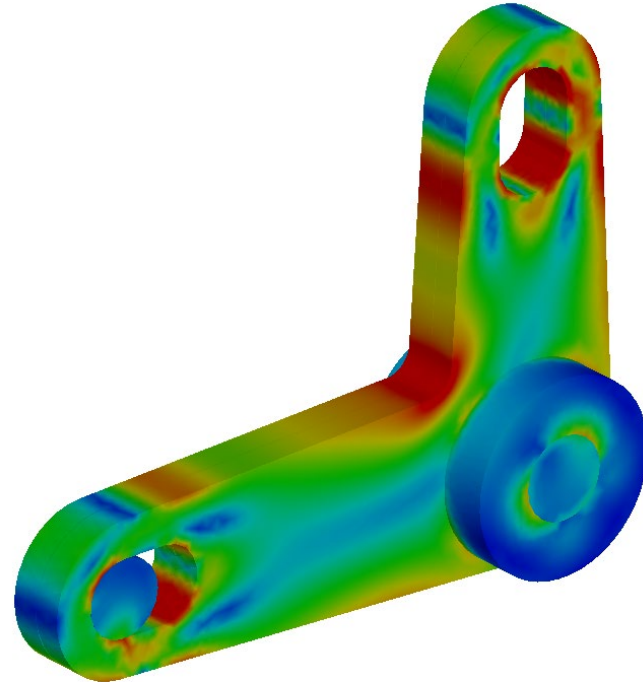
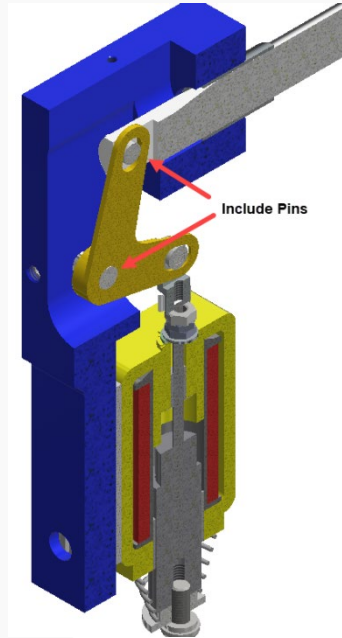


Inventor Stress

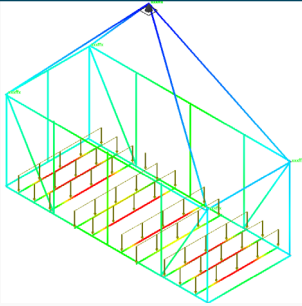
Linear Analysis
Modal Analysis

Element types

Solid
Shells



Upfront Simulation Solutions from Symetri

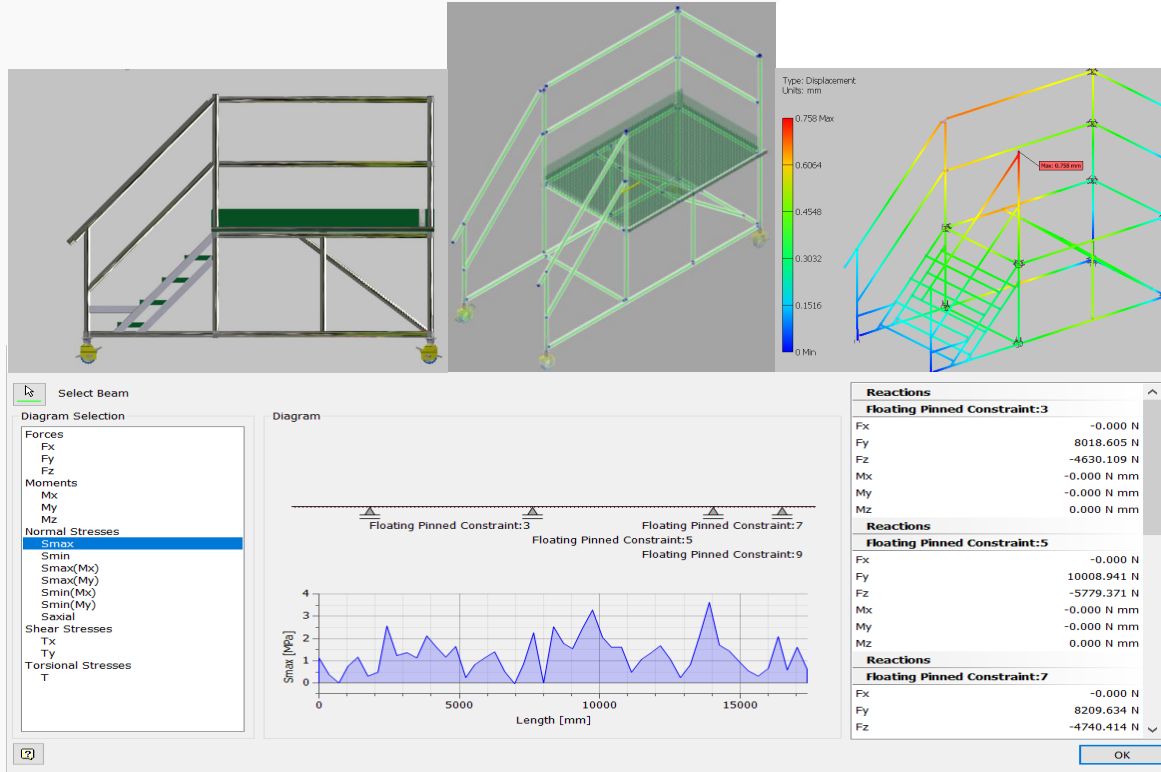


Frame Analysis

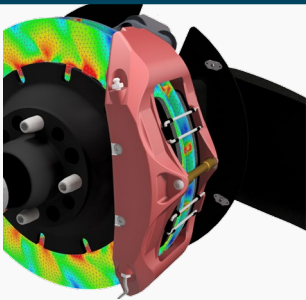
Linear Analysis
Modal Analysis

Element types

Beams only



Upfront Simulation Solutions from Symetri

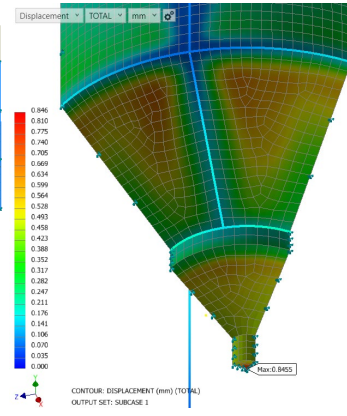
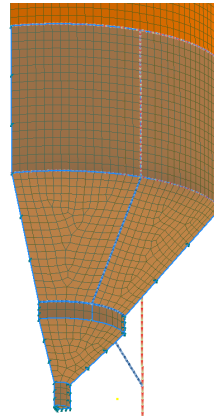
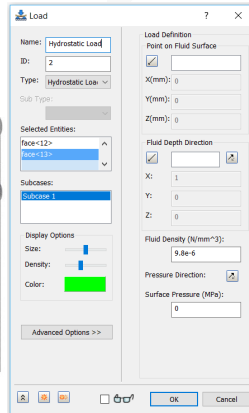
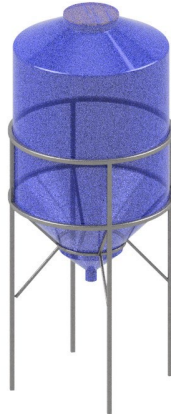
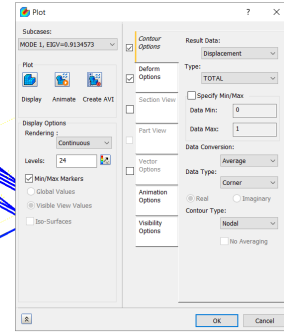
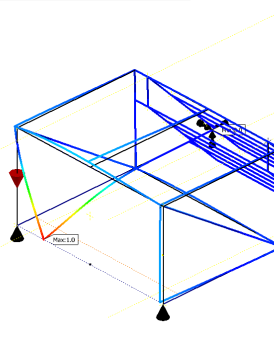
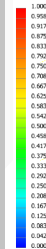
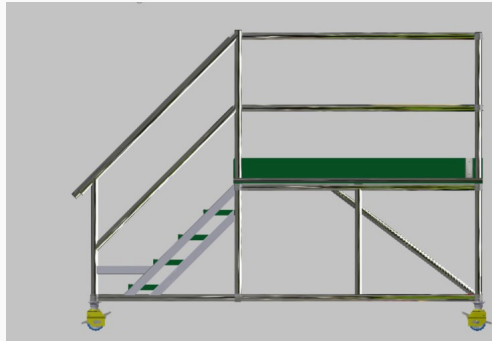


Inventor Nastran

Buckling Analysis
Fatigue Analysis
Nonlinear Analysis
And more.....

Element types

Solid
Shells
Beams

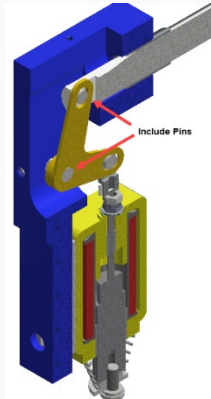


Upfront Simulation Solutions from Symetri



PRODUCT DESIGN &
MANUFACTURING COLLECTION

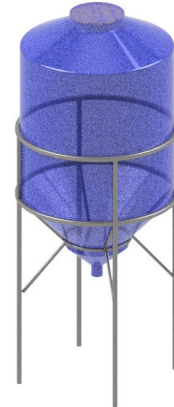
OVERVIEW DEMONSTRATIONS



Stress Analysis



Frame Analysis

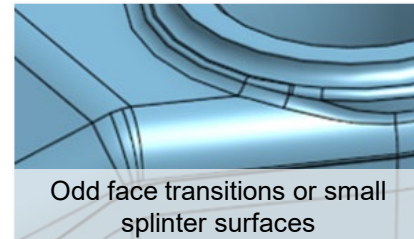
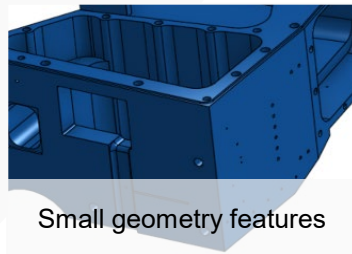
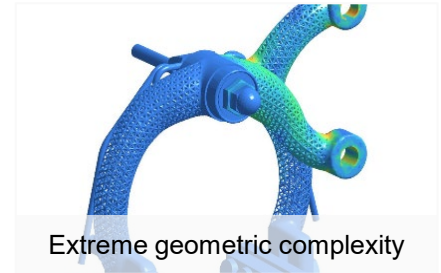
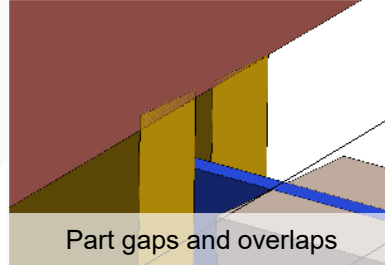
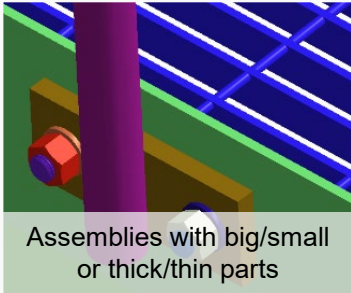


Inventor Nastran

Upfront Simulation Solutions from Symetri

What is common in these applications (Applies to many if not all current available commercial solutions)

- Require Mesh
 - Size of Mesh has an impact on solution times
- To enable the Mesh process we need some form of geometry simplification
 - Depending on the detail, complexity and size of assembly this can be very time consuming.



Upfront Simulation Solutions from Symetri



Altair **SimSolid** is **structural simulation** that operates directly on **original, un-simplified CAD assemblies**, **does not create a mesh..**

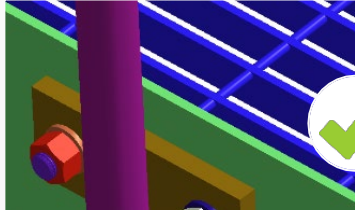
..and provides results in **seconds to minutes**

Altair® SimSolid®

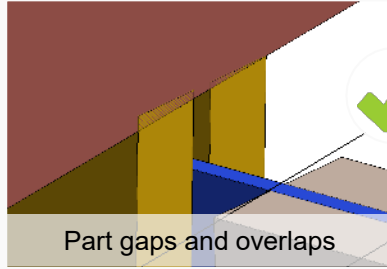
Structural Analysis for Rapid Design Iterations

Upfront Simulation Solutions from Symetri

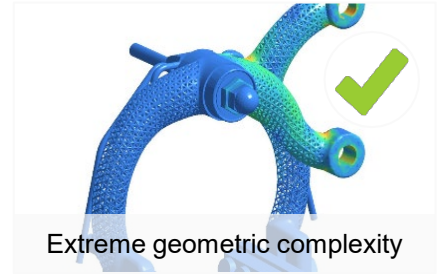
SimSolid is very forgiving and can handle TRADITIONAL FEA Meshing Roadblocks



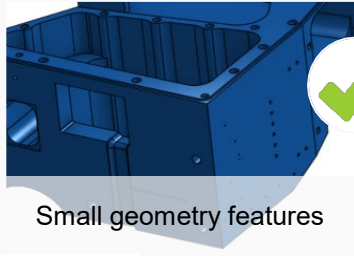
Assemblies with big/small or thick/thin parts



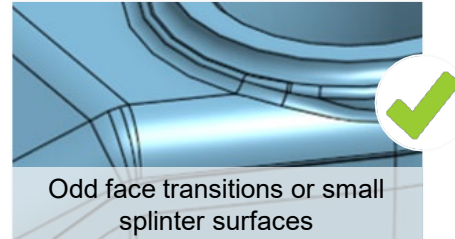
Part gaps and overlaps



Extreme geometric complexity

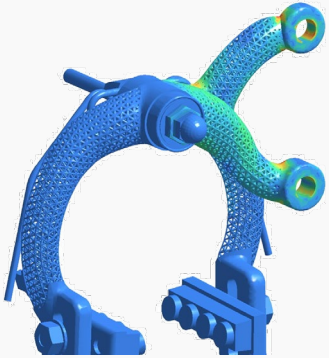


Small geometry features



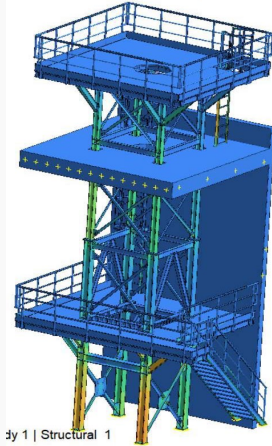
Odd face transitions or small splinter surfaces

Upfront Simulation Solutions from Symetri



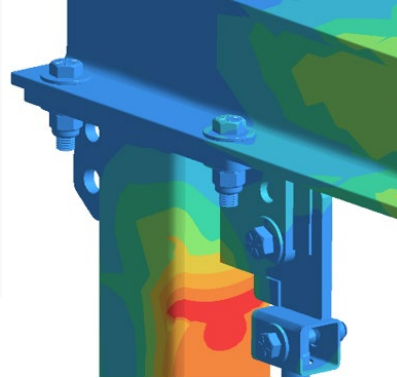
Complex models

- 3D Printed
- Additive Manufactured
- Lattice structures
- Organic Structures



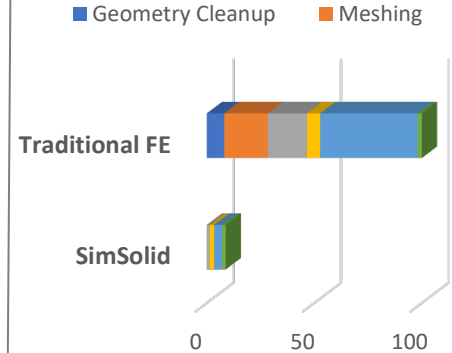
Large Scale models

- Building Structural framework
- Welded Fabrications



Original models

- Inventor Bolted Connections



Rapid Results

- Literally within minutes
- Automatic results convergence

Upfront Simulation Solutions from Symetri

Altair® SimSolid®

Structural Analysis for Rapid Design Iterations

OVERVIEW DEMONSTRATION



Model courtesy of Pentre Group

Further Information

Inventor Nastran Product Info

www.autodesk.com/products/inventor-nastran/overview

Video showing overview of Stress/Frame and Nastran

www.symetri.co.uk/insights/video-library/autodesk-simulation

Blogpost articles sharing tips and guidance on Nastran

www.symetri.co.uk/insights?f=2143&s=blog

Altair SimSolid including info to access benchmark reports

www.symetri.co.uk/products/simsolid

Altair SimSolid past recorded webinars

www.symetri.co.uk/insights?f=2143&s=video-library

Nastran Training courses

www.symetri.co.uk/training/training-courses?f=2143&s=courses

Forthcoming Webinar

Simulate at the Speed of Design in the Oil and Gas Industry Featuring TechnipFMC

Live Webinar - 6th April 2022 | 2pm - 3pm BST (3pm - 4pm CEST)

Featuring presentation and live Q&A with:



The Oil and Gas sector is facing new challenges as material costs rise and operators press equipment providers to manufacture more cost-efficient solutions for their projects. To rise to the task, TechnipFMC is investigating the implementation of faster, iterative conceptual analysis at an early phase of product designs. This is with a view to reduce both part costs through material efficiency and through more efficient working practices.

In this webinar, Engineering Manager Roger Dailly and Design Engineer Sean Doble will summarise a 6-month long trial undertaken by TechnipFMC on Altair SimSolid. They will cover some of the projects trialled using the software and discuss some of the key opportunities seen by using SimSolid over traditional mesh-based FEA software.

All attendees will get access to a free trial of Altair SimSolid with technical support to get you started*

Attend and Learn:

- Gain insight into TechnipFMC's experience of using rapid structural analysis solutions
- Learn how these technologies can provide you with design guidance for highly complex parts in seconds
- Understand how simulation used in the concept phase can inform design decisions and minimise the cost of late design changes

Speakers



Roger Dailly
Engineering Manager
TechnipFMC



Sean Doble
Design Engineer
TechnipFMC

[Link to register for webinar](#)

www.symetri.co.uk/news-events/events/webinar-simulate-at-the-speed-of-design-in-the-oil-and-gas-industry-with-technipfmc

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Contact Details:

Wasim Younis

wasim.younis@symetri.co.uk

Direct: +44 (0) 1924 232995

Mobile: +44 (0) 7980 735244

THANKS FOR ATTENDING