Detroit Engineered Products (DEP) is an Engineering Solutions and Product Development company. Since its inception in 1998 in Troy, Michigan, USA, DEP is now a global company with footprints in Europe, China, Korea, Japan and India. DEP uses the accelerated and transformed product development process, accomplished by utilizing our proprietary platform, DEP MeshWorks, which rapidly reduces the development time of products for all segments.

Rapid time to market of new products across several industry sectors such as automotive, defense, aerospace, energy, shipping, oil & gas, consumer products and heavy equipment is a unique value proposition delivered to clients via DEPs world class engineers and the DEP MeshWorks platform.

DEPs team provides consulting services that can be applied across various applications in oil and gas, across the life cycle. By using MeshWorks tightly integrated with other leading software, DEP provides various tools and solutions that help clients create smarter solutions. DEPs unique approach to analysis, and CAD services offered to clients has reputed us as a trusted CAE outsourcing partner for engineering companies globally.

DEP
Smarter Solutions. Realized.

OIL AND GAS

PRODUCTION

REFINING & STORAGE

TRANSPORTATION & DELIVERY
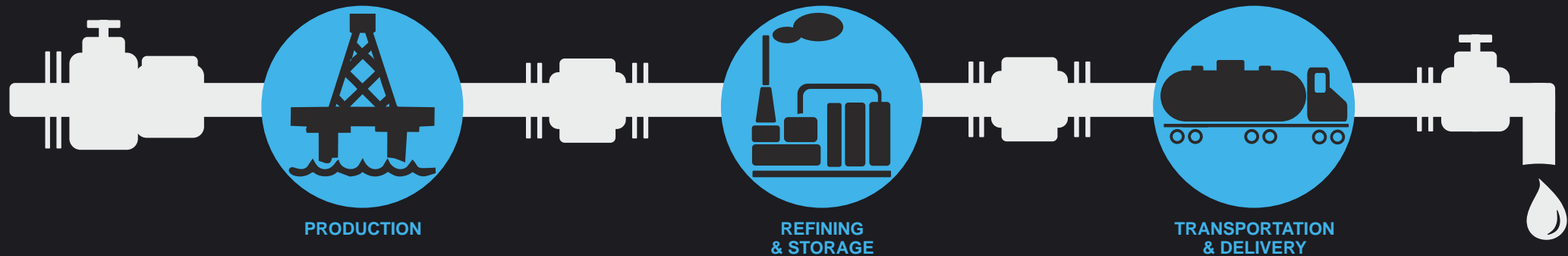
CAD Services

- · 2-D, 3-D Modeling in AutoCAD, Microstation and Solidworks
- · Bills of Material
- · General Arrangement Drawings
- · Skid Mounted Equipment Design
- · 3-D Piping and Pressure Vessel Design

Analysis

- · Structural Steel Analysis
- · Finite Element Analysis of components and equipment
  - · Linear Static and Dynamic
  - · Non-linear
  - · CFD and Thermal
- · CFD Analysis using CAD Morphing
- · Pipe Flow Analysis

Powered by **DEP MeshWorks**

- Design of multiple concepts of semi-submersibles and platforms through morphing
- Structural analysis for durability and vibration
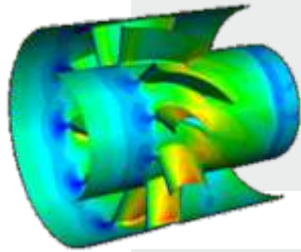
- Design of turbomachinery components through morphing
- Morphing of fan blade profiles
- Design through rapid morphing of housing, impellers, scrolls
- Structural and CFD analysis of compressors, pumps and valves
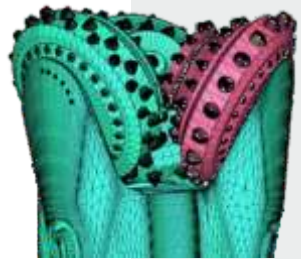
- Design and analysis of drill bits and drill heads
- Optimizing drill bit designs for structure, durability, grinding performance and fluid flow.
- Design of drill bit – CAD morphing from legacy data to evaluate different insert (length, width, height, and pitch), lug, and shirttail configurations
- Stress, wear, durability, and CFD analysis
- Parametric CAE modeling to rapidly evaluate different configurations to performance criteria
- Robust DOE
- Prototype part development
- Reverse engineering of competitive products
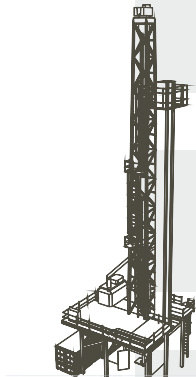
- Design and parametric analysis of top-sides
- Riser design
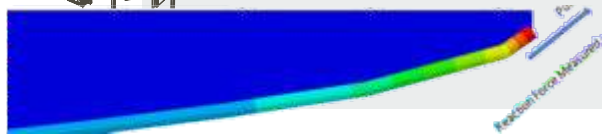
- Down hole tubing stress analysis
- Transient dynamic analyses

Impact analysis on riser guard platform to protect the gas pipeline

The Client:
The client is a major EPC contractor for a global Oil corporation.

The Challenge:
To Develop the FE-Model and execute vessel impact analysis on the riser guard installed on the west face of the XY platform to protect the 16-inch Dry gas pipeline from XY. The analysis is performed to check the riser guard is able withstand the operational impact load from the vessel.

The Solution:
The Engineering team at DEP created an engineering process after a detailed study of the project scope. The finite element model was generated based on the drawings provided by the customer. The vessel is assumed as rigid barrier & and it is placed parallel to the riserguard. The software which was used to conduct the analysis was ABAQUS Simulia. The team had very close discussions with customer to understand the load cases & boundary conditions. One of the load case happened to be that the structure is constrained in all degrees of freedom at the MUDLINE. As the system had to be commissioned immediately, there was a tight timeline to generate the results summary.

The Result
The complete summary of the results of the riser guard with & without fillet was generated & submitted to the customer which resulted in faster commissioning of the system.
The results & practices generated by DEP are still used as the standard practice at the customer end.

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