



ANSYS® + Safespill Systems

“As our products continue to evolve, the ability to accurately predict material behaviors without the need to build physical prototypes has become essential. Integrating ANSYS simulation solutions into our design process has enabled us to increase the quality of design iterations and ultimately produce more robust products.”

Chad Becht

*Product Development
Safespill Systems
Houston, TX*

ANSYS Products Help Safespill Systems to Quickly Solve Problems When Developing New Applications of Our Technology

Due to the unique ways that our product is utilized by our clients, each application tends to involve a certain level of customization to provide the best possible solution. This can range from analyzing standard product geometries using application-specific load cases to developing custom designs specifically tailored to our clients' needs. The use of ANSYS Simulation software enables our design team to develop these solutions more quickly and accurately.

Challenges

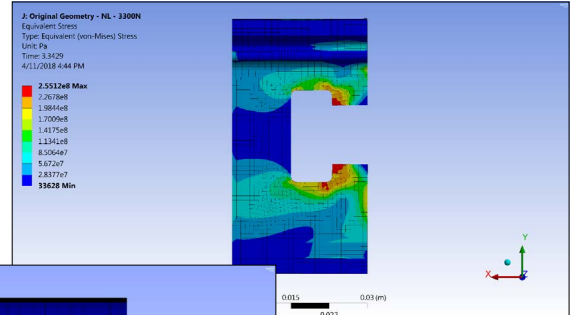
While developing a client-specific application, the harsh environment that our system will be utilized in necessitated the use of chemically resistant PTFE for all seal materials. This came with the added drawback of increasing the hardness of the material, which required significantly higher compression forces to achieve a proper seal. The design utilizes a bolted connection to compress the seals. It was unknown if the standard geometry could generate sufficient forces to achieve adequate compression. We chose to use simulation to predict the maximum achievable seal compression force before component damage would occur.

Technology Used

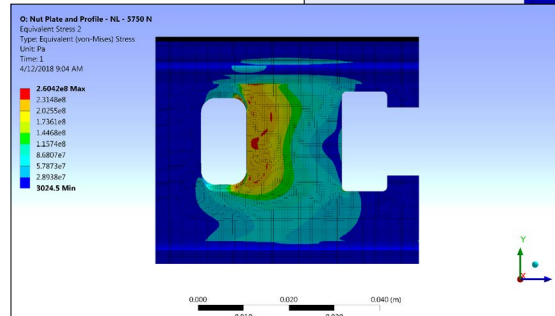
ANSYS Mechanical

Engineering Solution

- Using elastic-plastic material properties in the static structural module, the design team was able to precisely predict the loading that would result in component failure.
- During physical testing it was determined that the compression forces required to achieve a proper seal exceeded the forces achievable with the current design.
- As the interface was redesigned, ANSYS Mechanical was used to validate concepts and avoid the need to build multiple prototypes for physical testing.



Nonlinear static structural analysis of original product geometry showing equivalent stresses with a 3000 N loading



Nonlinear static structural analysis of revised product geometry showing equivalent stresses with a 5750 N loading

Benefits

The use of ANSYS simulation has become an integral part in the design process. ANSYS has enabled us to significantly decrease the time between product conceptualization and validation by allowing the design team to minimize the need to build prototypes between iterations. In the example described, the duration between identifying the failure mode and developing a working solution was under two weeks. Simulation enabled the team to test multiple iterations computationally and ultimately develop a product capable of generating compression forces 75 percent greater than the initial design.

Company Description

Safespill Systems provides radically simpler and safer solutions for industrial problems. Our modular system is a hollow aluminum floor, with a perforated top surface, that contains spilled liquids and pumps them into designated containment. We help companies:

- Reduce employee exposure to flammable and hazardous liquids.
- Reduce operational downtime from catastrophic spills.
- Economically modify areas not purposed for handling chemicals.