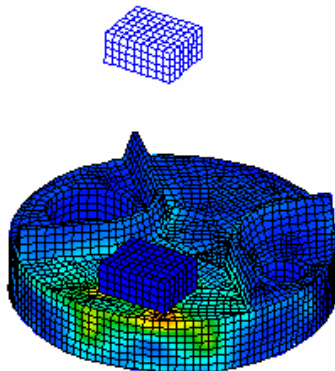


Civil Case Study (Odan/Detech Group Inc. – Stormceptor Fiberglass Plastic Insert)



Stormceptor System with Fiberglass Plastic Insert



Impact Analysis of the Insert – Maximum Von Mises Stress

The Odan/Detech Group Inc. (Odan/Detech) was retained by Stormceptor Canada Inc. to review and perform a stress analysis of the Stormceptor Fiberglass Plastic Insert, with emphasis on safety.

The Stormceptor System is a vertically oriented separator that is designed to separate and store oil and sediment from stormwater. The key benefit of the system is the built-in bypass feature that prevents stored contaminants from being flushed from the storage chamber during high flow storm events.

Odan/Detech performed finite element analyses with NEi Nastran for Windows software in order to determine maximum stresses and deflections. Several models were employed along with many refined computer runs. Both static and dynamic analyses were performed.

To ensure safety, the product team agreed that the Insert should be able to withstand the impact of a 100 Kilograms (220 pounds) object dropped 4 meters (13.12 feet) above the insert. The Stormceptor Insert is placed in manhole type structures, thus maintenance is required. If a relatively heavy object or person fell from the manhole lid, the Insert should be able to absorb the energy. The Insert toughness will ensure that the person will not fall into the polluted water below the insert. In order to model the impact, a nonlinear dynamic analysis using large displacement with follower forces with material nonlinearity code was required.

The results of the static, dynamic, buckling and impact analyses were checked against theory and other codes and they all compared well. The Stormceptor Fiber Glass Plastic Insert is safe and tough enough to take an impact of a 100 Kilograms (220 pounds) object over a 4.0 meters (13.2 feet) height.

NEi Nastran for Windows was chosen due to its close integration with FEMAP as a pre- and post-processor, the Editor, which allows running of multiple jobs and quick editing of the input file without graphical editing and translations, and its very reliable solver, which gives comfort to designers of complicated structures.

NEi Software, Inc. is aggressively focused on commitment to the customer. Detailed documentation, customized on-site training, and comprehensive technical support ensures that you will see immediate return on your investment.

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NEi Nastran *for Windows*
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