

FE107 v2.7

FE107 uses finite element technology to provide stress analyses of nozzle connections on piping and pressure vessels. It replaces WRC 107 as a calculation tool that can be applied when WRC107 or WRC297 correlations or assumptions are limited. FE107 output compares directly to the code results for comparison.

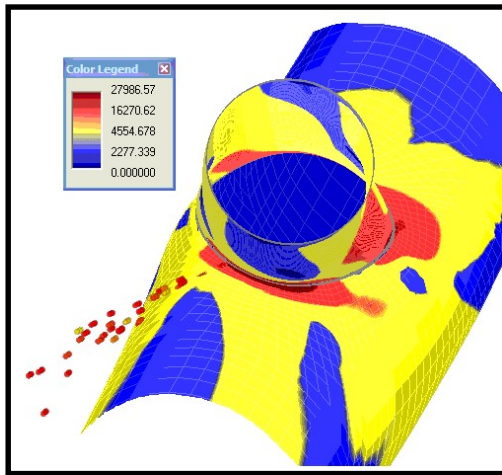
WHY SHOULD I USE FE107?

WRC 107 and 297 have known parameter and geometry limitations.

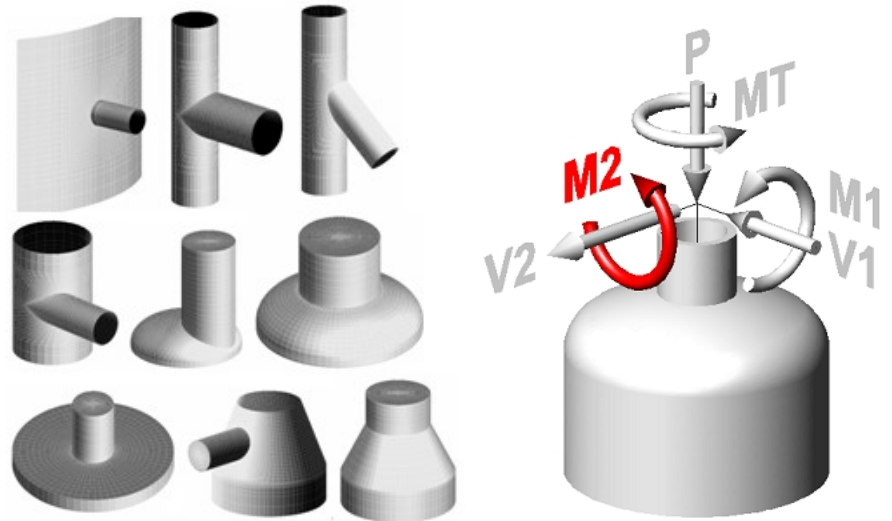
For example, a WRC107 cylinder-to-cylinder analysis does not calculate stress in the nozzle. When $t/T < 1$, or when a repad is placed on the intersection, the high stress is often in the nozzle and is completely missed in a WRC 107 analysis.

FE107 is applicable to all parameter ranges including laterals, hillsides, repads and barrel-type nozzles.

There are fundamental assumptions in WRC 107 and correlations that are used which limit the application of WRC 107 in industrial applications. Most computer programs do not provide warnings or guidance when these limitations are violated – FE107 does.



Animated Graphical Output



PRG RECOMMENDS USING FE107 WHEN...

- $d/D > 0.5$
- $t/T > 1.0$
- Pad reinforced nozzles
- Hillsides or laterals
- Area replacement rules for pressure are barely satisfied and large diameter divided by thickness ratio (D/T).
- Temperatures are approaching the creep regime.
- Cycles are greater than 5000.
- Design and operating conditions are approximately the same.
- The load consists of high-pressure stresses and high loads.
- The Piping attached to the nozzle is long, flexible, and somewhat unrestrained.

FE107 is only available as a part of the annual Software Maintenance Service (SMS) for FEPipe and NozzlePRO. It is not sold as an independent program.