



NeoMetrix
Technologies, Inc.

Tech Brief 02-06-002

Nozzle Analysis – Volume Loss

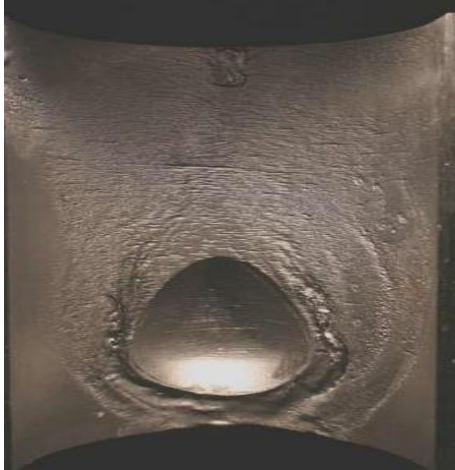


Figure 1 – Original Part

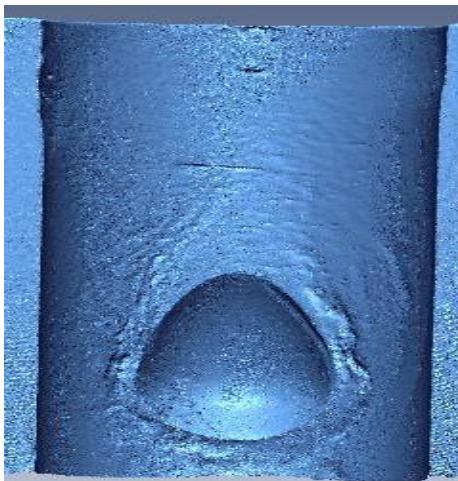


Figure 2 – Scanned Data

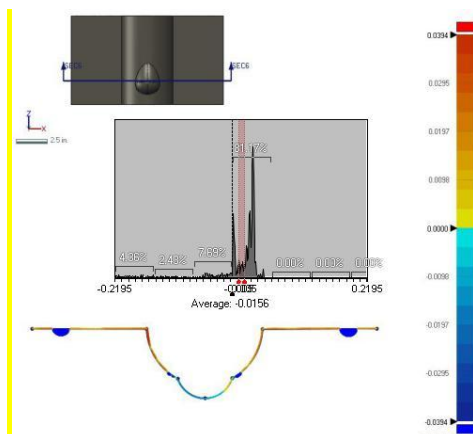


Figure 3 – Sectional Analysis

Problem:

“Hot” water jetting through pipes in nuclear plants can cause damage to pipe walls and nozzles. Accurate methods are required to quantify the amount of material lost to determine if repairs or replacement is required. (Figure 1).

Traditional Method:

A resin cast was typically made of the void, then measured to calculate the volume loss. This method is subject to human error, and shrinkage of the cast can cause this method to be inaccurate.

NeoMetrix Solution:

- Samples were laser scanned with the Konica-Minolta Range 7 scanner (accuracy of .0015”)
- Raw data is triangulated to generate a polygonal mesh (Figure 2)
- Volume loss calculations and solid modeling performed in Rapidform XOR.
- Compared actual (scan) vs. nominal (model) in Rapidform XOV then generated PDF reports

NeoMetrix Advantage:

- Accurate and Repeatable results
- Detailed reports documenting cross section and whole deviation of the sample nozzles. (Figure 3)