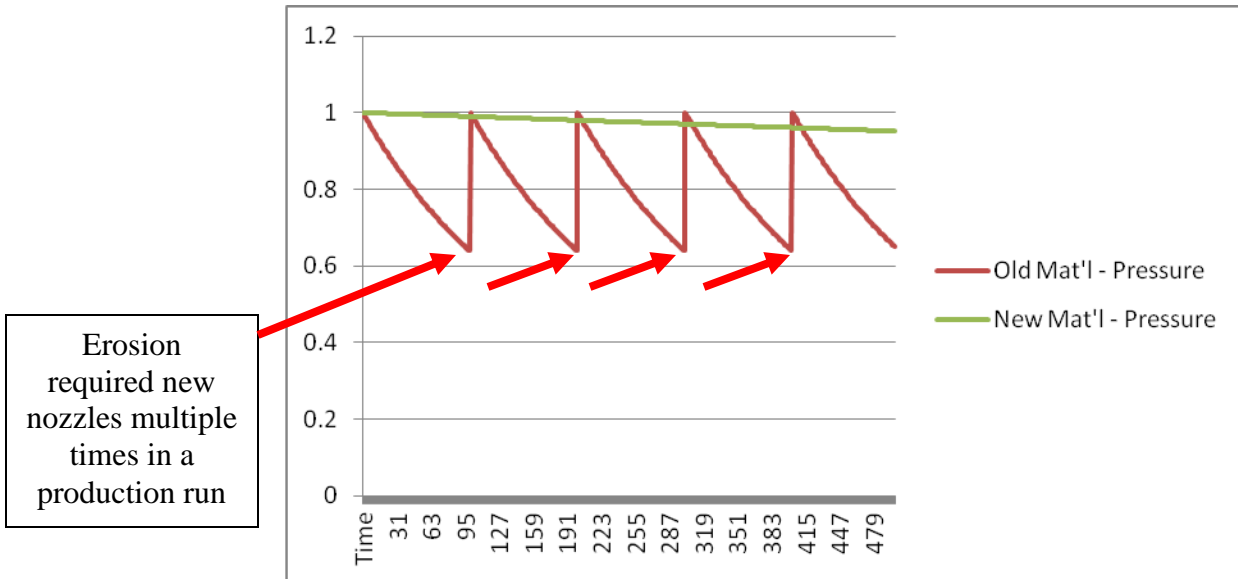


Category: Design & Analysis

Example: New coating for resisting abrasion from sprayed fluid

Situation: Manufacturing: spraying hot and abrasive feedstock fluids.



(Note: Data is not actual data but only is simulated to show the concept)

Problem: Fluid feedstock can contain abrasive materials causing rapid wear of spray orifices, degrading process stability and requiring frequent nozzle changes. Pressure drops shift the process from optimal settings and changing the nozzles disrupts the process.

Action:

1. Informed of new hardening technology through plant contact
2. Identified correct substrate to use compatible with both hardening technology and reactor environment; partnered with coating supplier in this selection and cross-checked with internal process experts
3. Obtained multiple samples with several orifice configurations per trial plants' requests

Result:

1. New nozzles achieved significant increase in service life when tested to failure
2. Reduced abrasion substantially decreased process variation over production runs.
3. Reduced or eliminated nozzle changes needed (depending on length of production run)