Consolidation of MWL Engine Sub Assembly Line

Project Objectives:
- Compress number of zones from 8 to 4
- Line Level total cycle time below 35 minutes
- Reduce 25% of the engine line’s footprint
- Reduce 50% of in-process WIP
- Relocate pump and valve sub assemblies next to engine line

Design Tasks:
- Perform Time Study per model
- Construct Heat Maps per model
- Construct Precedence diagrams for each model
- Construct Simulation based on operations’ standard work
- Balance the work along the line

Final Design:
- Developed new layout with 4 zones
- Moved pumps and valves sub assemblies closer to the engine sub-assembly line
- Moved transmission off the engine line to become a sub-assembly
- Balanced the line
- Reduced travel distances where possible

Cost Analysis and Results:
- Reduction of 40% (69 feet) of total distance of engine sub-assembly line (From 164’ to 95’)
- Reduction of 94% (154 feet) of distance between two kitting areas (From 164’ to 10’)
- Reduction of 96% (120 feet) of travel distance from kitting to engine sub-assembly line (From 125’ to 5’)
- Reduced WIP on the line by 50% from 8 in-process engines to 4. Savings estimate of $158,863.68.
- Reduction of 16% (2) operator positions on engine sub assembly line. Savings estimate of $160,000.00.

Heat Map Example for 950 Model

Improved layout with 4 zones, and a transmission sub assembly