



Maximizing OEE in the Assembly of Automotive Braking Components and Systems

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Company Description

EWIE works with manufacturing companies to provide:

- Machine Management Services
 - Monitor OEE
- Engineering Services
 - Inventory Management
 - Cost Savings Initiatives
- ZF Friedrichshafen
 - ZF has contracted EWIE with the purpose of cost saving
 - Manufactures ~ 4.2 million brake calipers annually

Potential Solutions

1. Extra Brush Passes
 - a. Have workers do extra brush passes to remove 3.5s slide load retest
 2. Batch Drilling
 - a. Have workers do brush passes in a batch rather than continuous flow to eliminate idle time
- OR**
3. Autonomous Machine
 - a. Have machine perform all brush passes

Carbon Problem

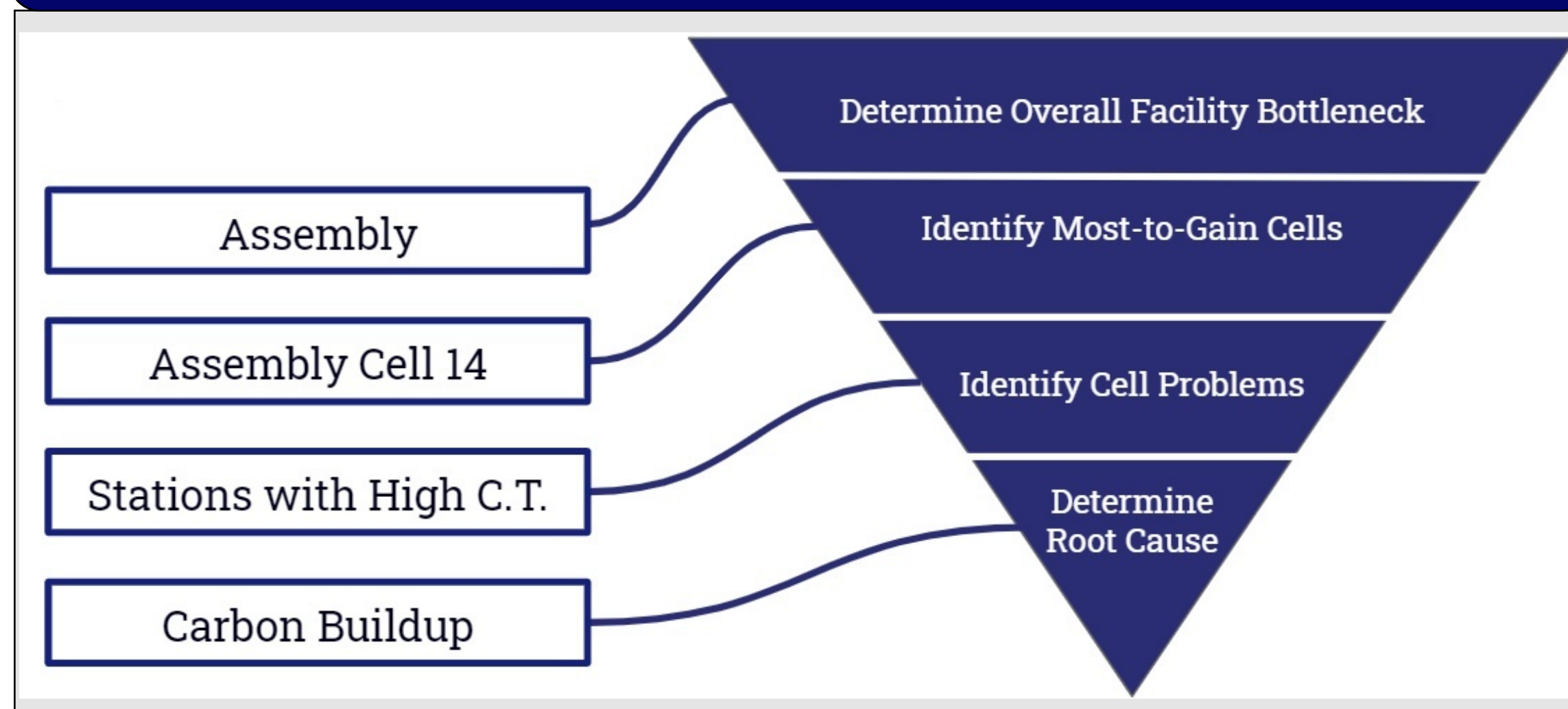
- Starting last year there has been an excessive amount of carbon buildup on the caliper brackets at Cell 14
- Parts were either:
 - Rejected, due to quality
 - retested. increasing cycle time

Drilling Setup



Cell 14. External Drilling Station and Employee Placement

Project Description



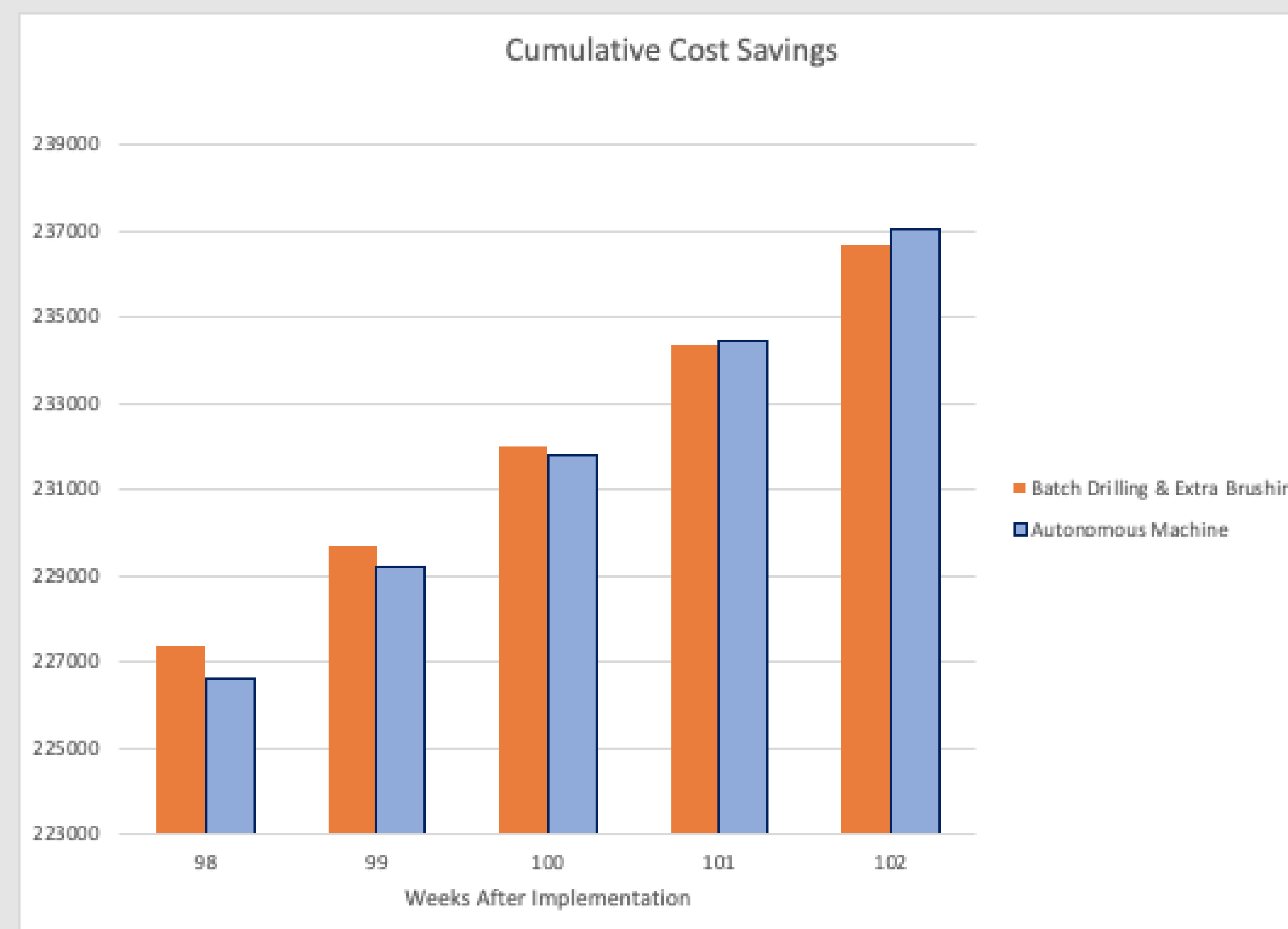
Impact

Batch Drilling & Multiple Passes

- \$2319.43 weekly savings
- \$0 upfront cost

Automated Implementation

- \$2618.24 weekly savings
- ~\$30,000 installation cost



Objectives

- Redesign and standardize current approach to carbon problem
 - Reduce Cell 14 labor hours by 10%
 - Reduce Cell 14 cycle time by 5%

Recommendation

- We propose that ZF implements batch drilling as well as increasing the number of brush passes.
 - Would translate to \$2320.15 weekly savings until the carbon problem is resolved entirely.
- The autonomous solution provided higher weekly savings, but would take almost two years to obtain higher total savings.