

**\*\*Any reference to or logos belonging to Toyota have been removed, also specific numbers relating to production have been removed\*\***

**STUDENT BACKGROUND**

**ACADEMIC EXPERIENCE:** 4th Year Mechatronics Engineering Student - University of Waterloo (Graduating April 2008)  
**CO-OP EXPERIENCE:** Ford Motor Company (Industrial Eng.) (Elec Eng.), General Motors (Manufacturing Eng.), Valiant Automation (Controls Eng.)  
**CURRENT POSITION:** TMMC - West Body Pilot - Manufacturing Engineering - Reporting to Ryan XXXX

**PERSONAL OBJECTIVES**

- Gain knowledge and practical experience in the latest manufacturing technologies.
- Improve project management skills, specifically planning, coordinating, and communicating effectively.

**SCHEDULE OF PROJECTS**

Planned	Actual	Eng. Supt.	May				June				July				August				Status and Evaluation	
			7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20		27
<b>1. Automated Press Panel Split Detection</b>																				
		R.W.																	100%	●
		R.W.																	100%	●
		R.W.																	100%	●
		R.W.																	100%	●
		R.W.																	100%	●
<b>2. Snake Robot / Datum Accuracy &amp; Repeatability</b>																				
		R.W.																	100%	●
<b>3. Cyclops Inline Weld Quality</b>																				
		R.W.																	100%	●
<b>4. AGV Specification</b>																				
		R.W.																	100%	●

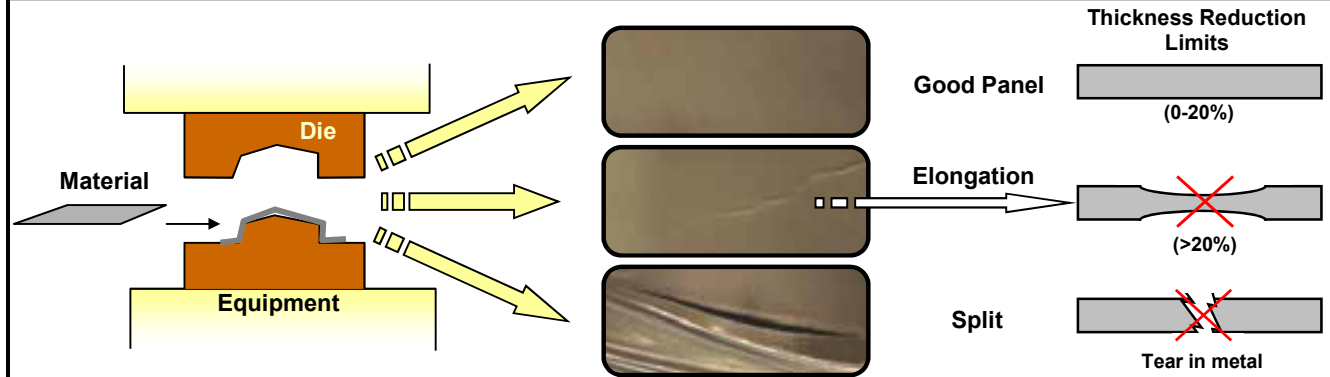
● Completed    ○ On Schedule    ▲ Behind Schedule, Can Meet Deadline    ✗ Will Not Meet Deadline

**HIGHLIGHT PROJECT**

**OBJECTIVE:** Evaluate use of thermal imaging for the purpose of split detection on stamped panels  
**TARGET:** Quality Control: Achieve 100% correlation with traditional inspection methods  
**ULTIMATE GOAL:** Quality Control: Implement in all presses and reduce shipped parts with splits to 0.

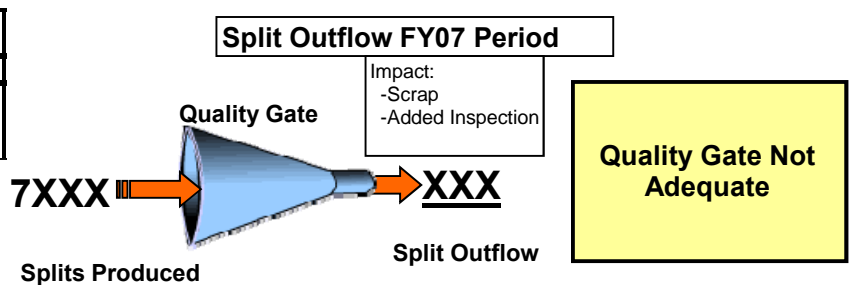
**BACKGROUND / ANALYSIS**

**1. Split Creation**



**2. Current Method**

Inspection		
Method	Frequency	Gap
Online Inspection	100%	- Insufficient time to complete - Elongation condition not clear
QC Audit		

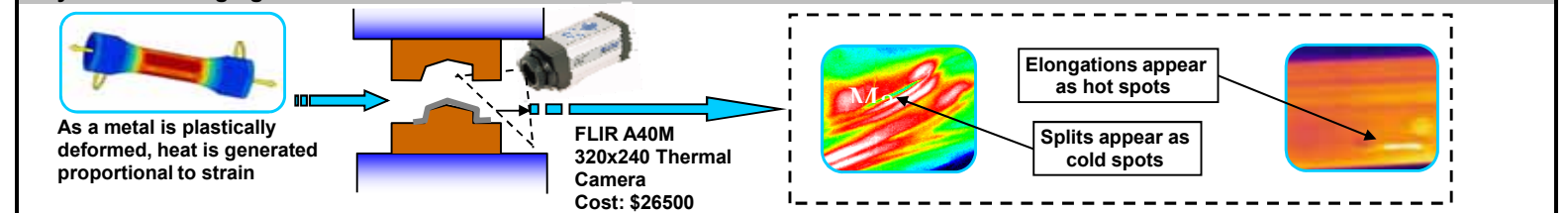


**3. Alternative methods**

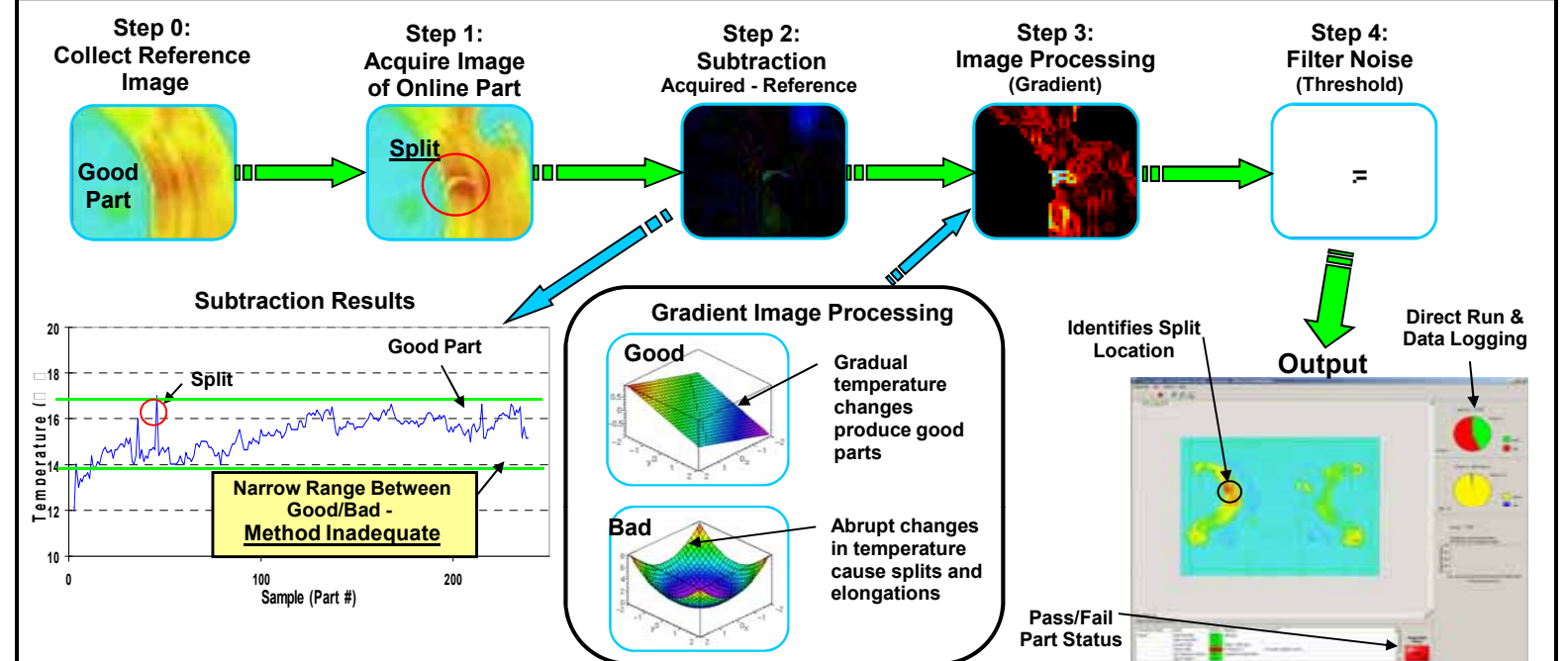
Plant	Method	Concerns	Eval.
XXXXX	Acoustic	Cannot detect elongations Required Sensors in very close proximity to the split Significant interference from ambient noise	
XXX	Differential Thermal Imaging	Cannot detect elongations Many false rejects	
XXXXX	Shockline Monitoring	Some parts do not have a visible shockline	

**TACTICS / ACTIONS**

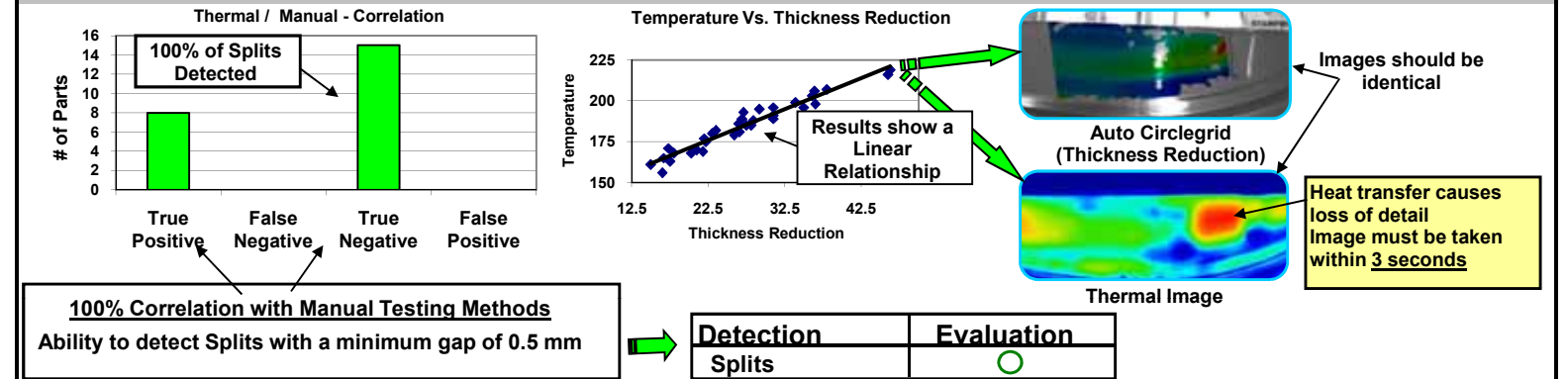
**Why Thermal Imaging?**



**Method**



**Results**



**Future Action**

- Purchase dual purpose Thermal Camera for Woodstock - for PM and Thermography Trials
- Install Camera online in 2A to debug software and determine reliability of the technique
- Calibrate software to an online part and monitor high volume accuracy of the technology

Date	Champion
August 07	T. Avila
August 07	T. Avila
2008	P. XXXXXX

**Co-op Recommendations**

- Condense training plan so that students go to their departments completely trained
- Consider providing a radio or pagers for communication away from the desk

**Analysis of Personal Objectives**

- The Thermal imaging and Snake robot studies leveraged my previous experience in robotics and image processing, ○
- Tasks gave me an opportunity to coordinate experiments and communicate results to the groups involved, ○

Evaluation
○
○