

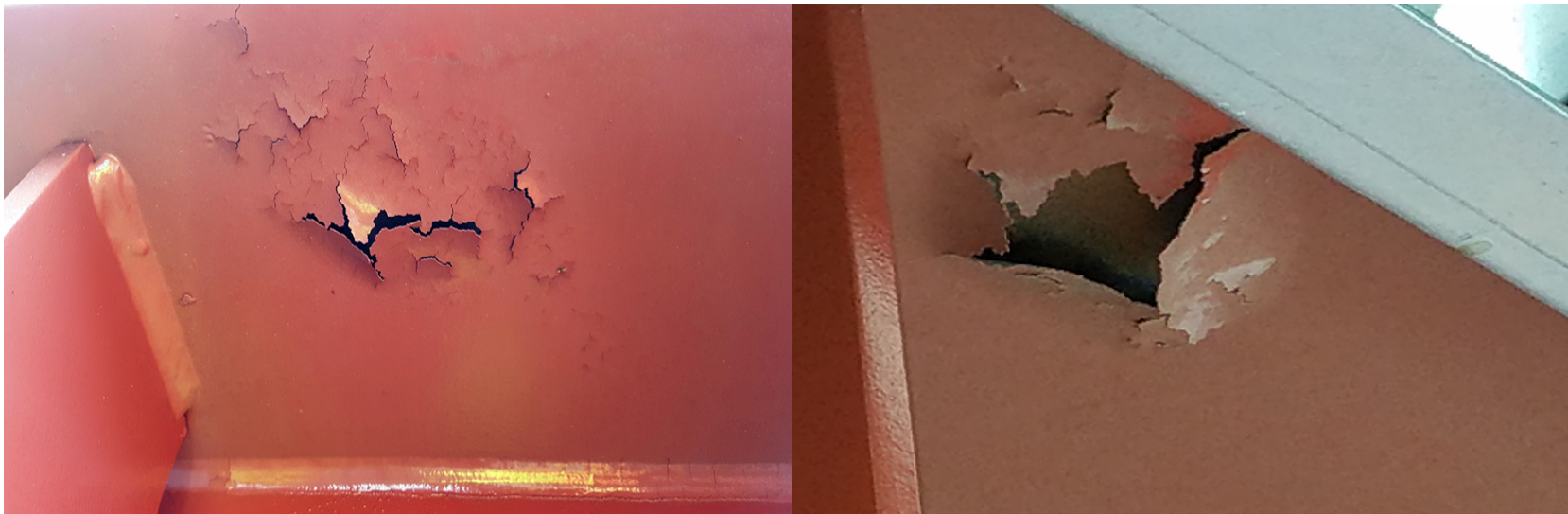
▶ Paint Testing Using IR-CIS



Presented By:
Joshua Charnosky

▶ Background

- Spots of cracking/flaking paint were noted by the field inspector
- Due to time constraints with the project girders were erected anyway



➤ Background (Continued)

- Locations: Underside of the top flange, web to flange weld (top flange) and crossframes
- Review of fabrication inspection records noted 6 girders having adhesion issues



Inspection Plan

- 100% Visual inspection of all girders
- Spot Testing
 - Adhesion testing using PosiTest AT-M Adhesion Tester (Per ASTM D4541)
 - Adhesion testing using Test Method A – X-Cut Tape Test (Per ASTM D3359)
 - Coating integrity testing using Infrared Coating Inspection System (IR-CIS)

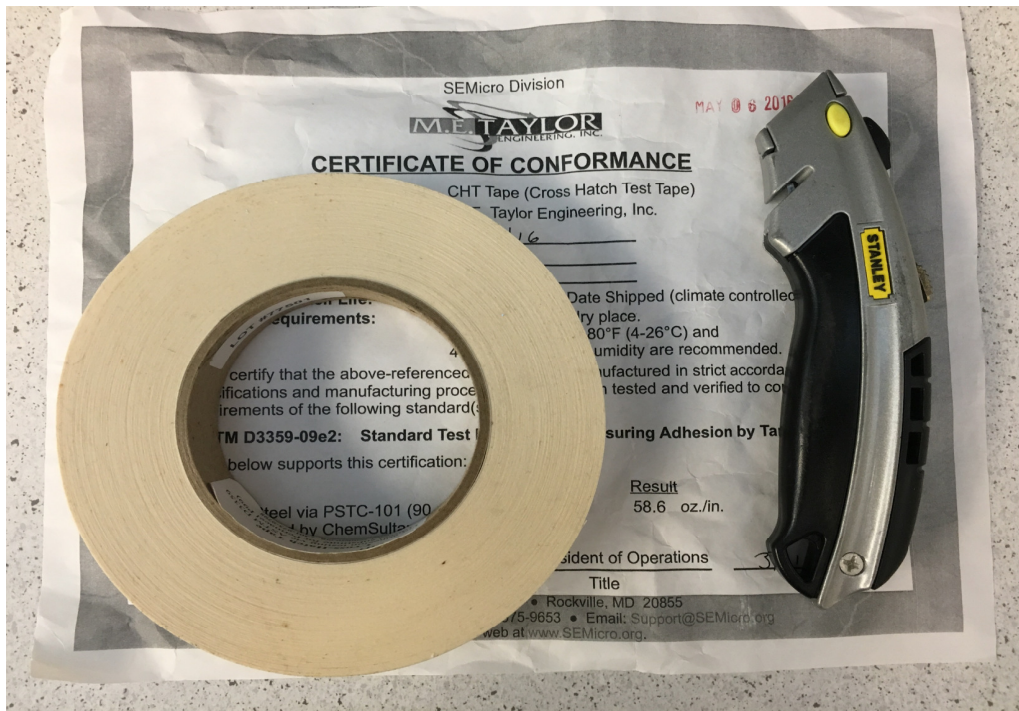
Equipment Used

- PosiTest AT-M Adhesion Tester
- ASTM D4541 (Self-Aligning Adhesion Tester Type V [Test Method E])



Equipment Used (Continued)

- CHT Tape (Cross Hatch Test Tape)
- ASTM D3359 Test Method A – X-Cut Tape Test

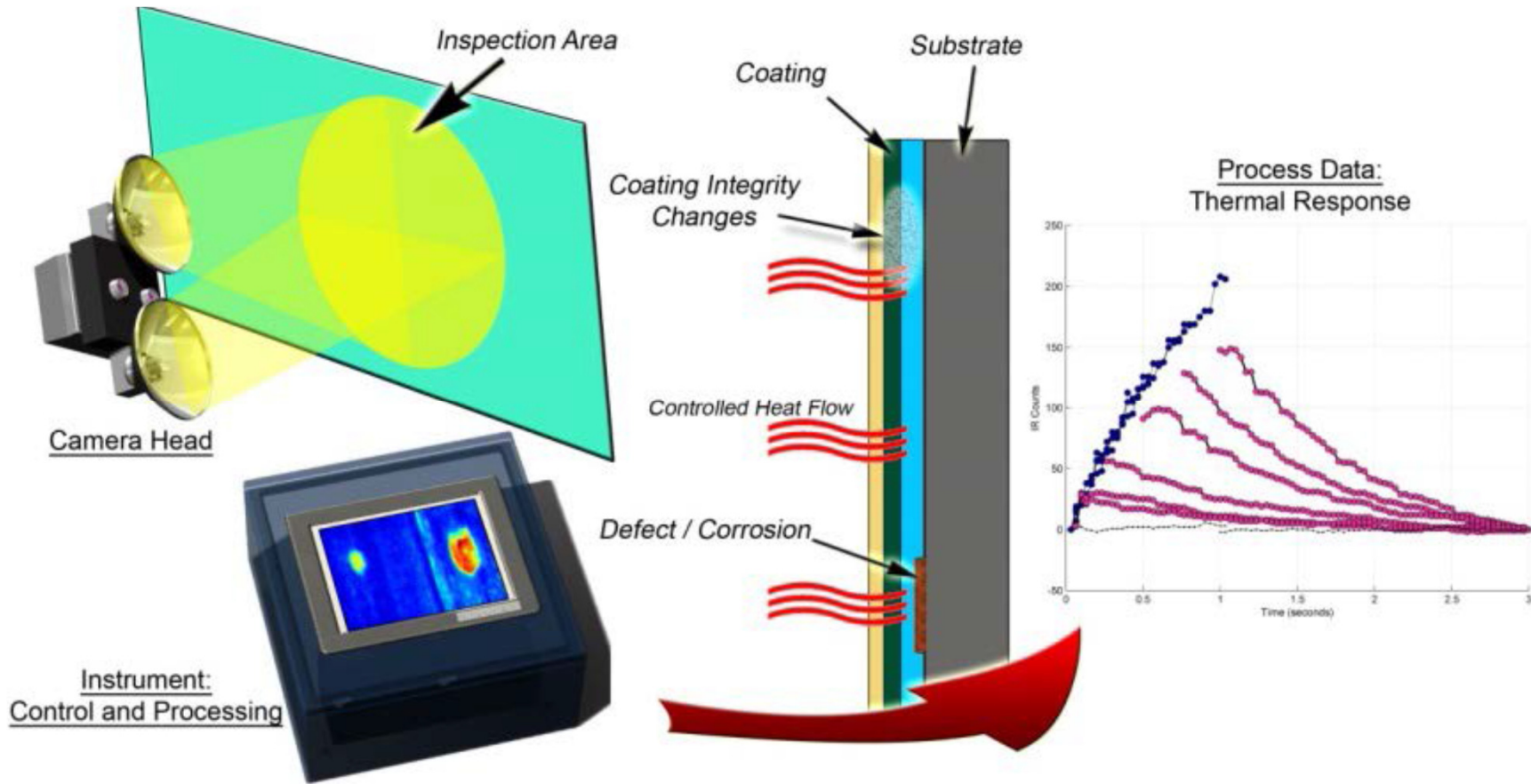


Equipment Used (Continued)

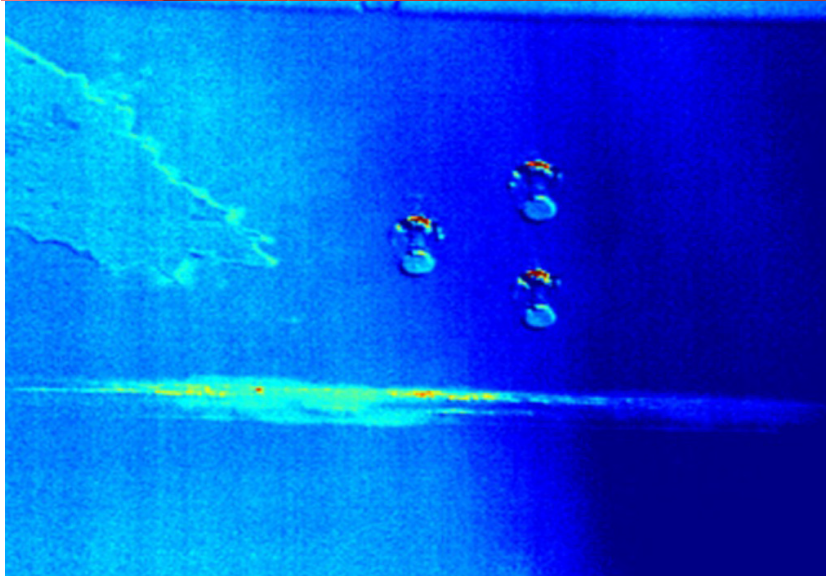
- Infrared Coating Inspection System (IR-CIS)



How the IR-CIS Works



Testing Results (Underside of Top Flange)

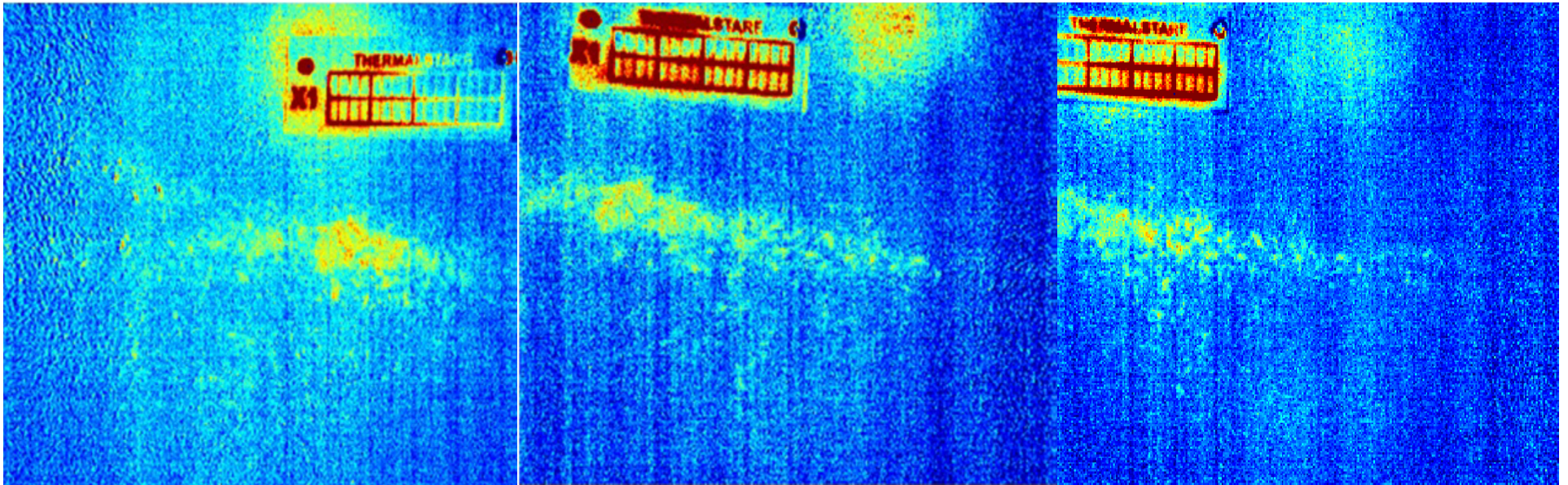


Dollies	PSI	Comments
1	882	100% Adhesive
2	79	Device Error (Invalid Reading)
3	809	100% Adhesive
Average:	846	

Testing Results (Fascia Girder Web Defect)



Testing Results (Fascia Girder Web Defect)

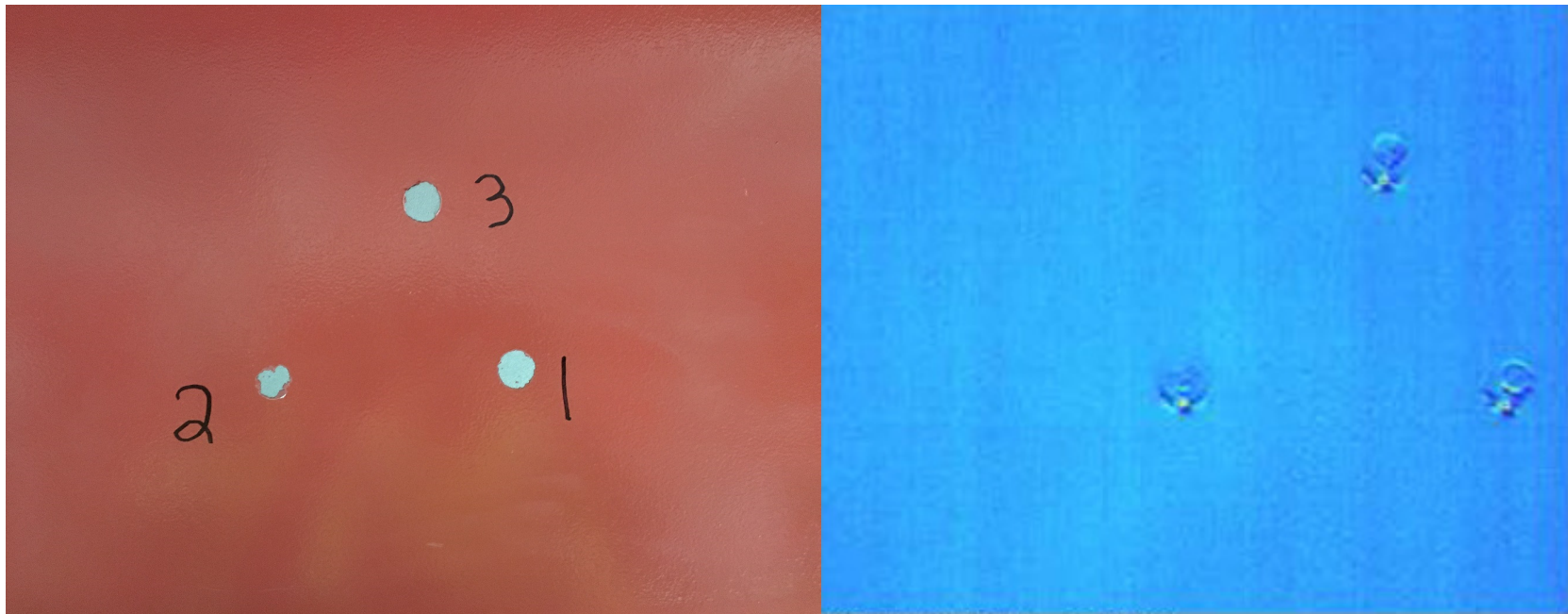


Testing Results (Fascia Girder Web Defect)



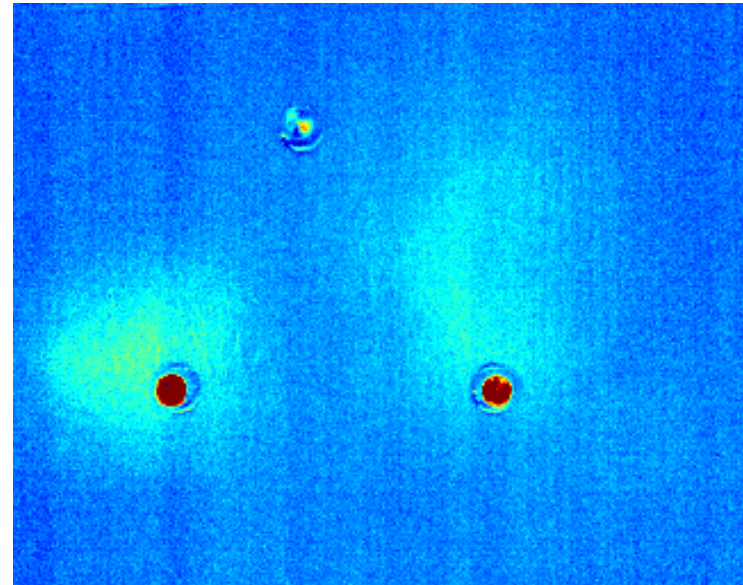
Dollies	PSI	Comments
1	465	75% Substrate/Primer, 25% Adhesive
2	249	100% Adhesive
3	145	100% Adhesive
4	623	95% Substrate/Primer, 5% Adhesive
5	661	98% Substrate/Primer, 2% Adhesive
6	912	90% Substrate/Primer, 10% Adhesive
Average	509	

Testing Results (Interior Girder Web)



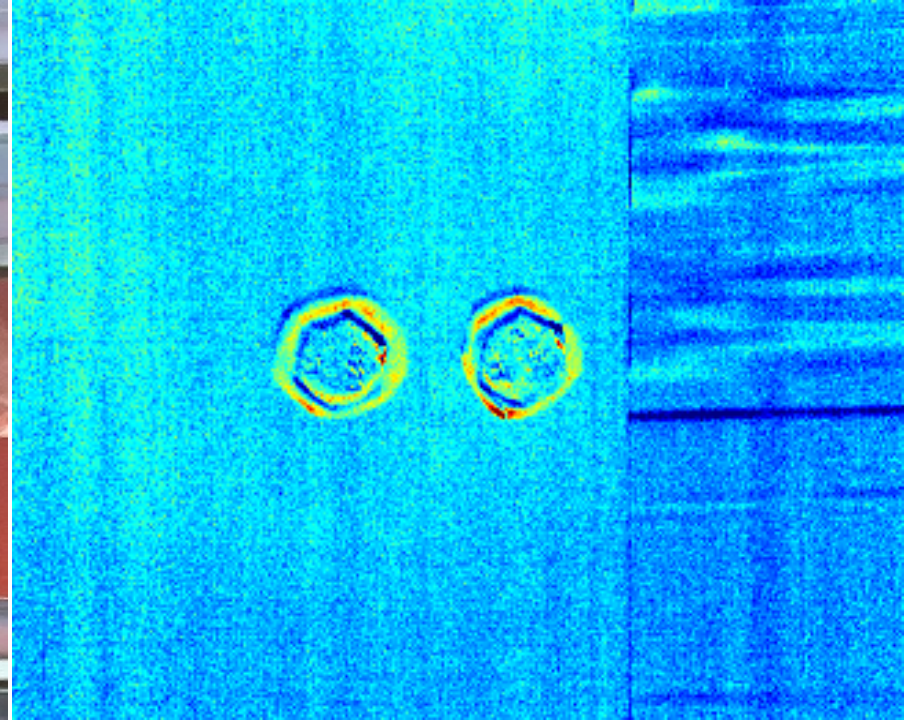
Dollies	PSI	Comments
1	1642	98% Substrate/Primer, 2% Adhesive
2	938	80% Substrate/Primer, 20% Adhesive
3	1439	99% Substrate/Primer, 1% Adhesive
Average:	1340	

Testing Result (Cross Frame Gusset Plate)

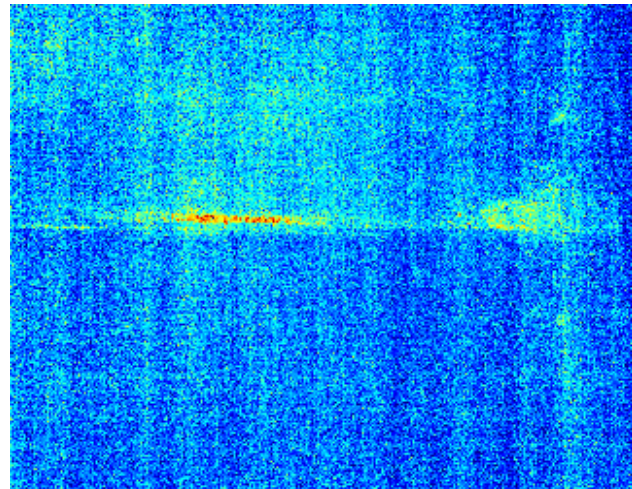
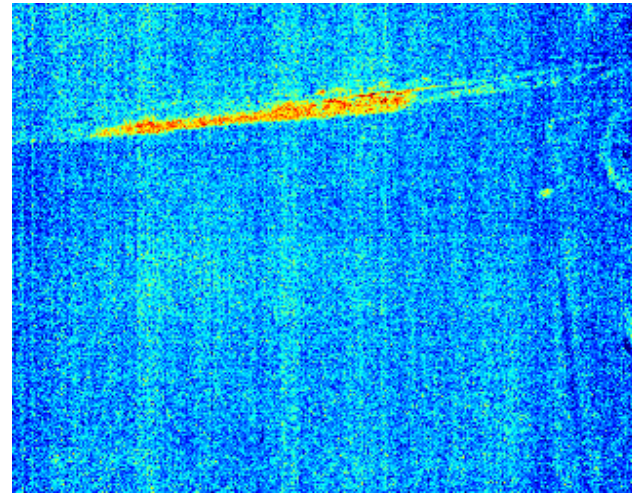


Dollies	PSI	Comments
1	550	5% Substrate/Primer, 95% Adhesive
2	603	100% Adhesive
3	1018	95% Substrate/Primer, 5% Adhesive
Average:	724	

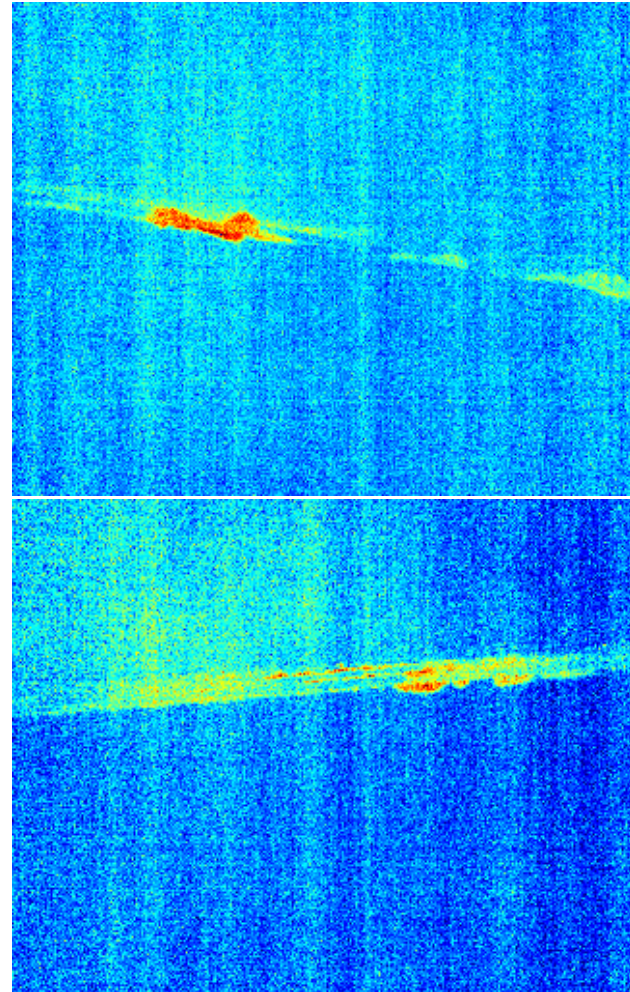
▶ Testing Results (Bolt Head)



Testing Results (Web-Flange Weld)



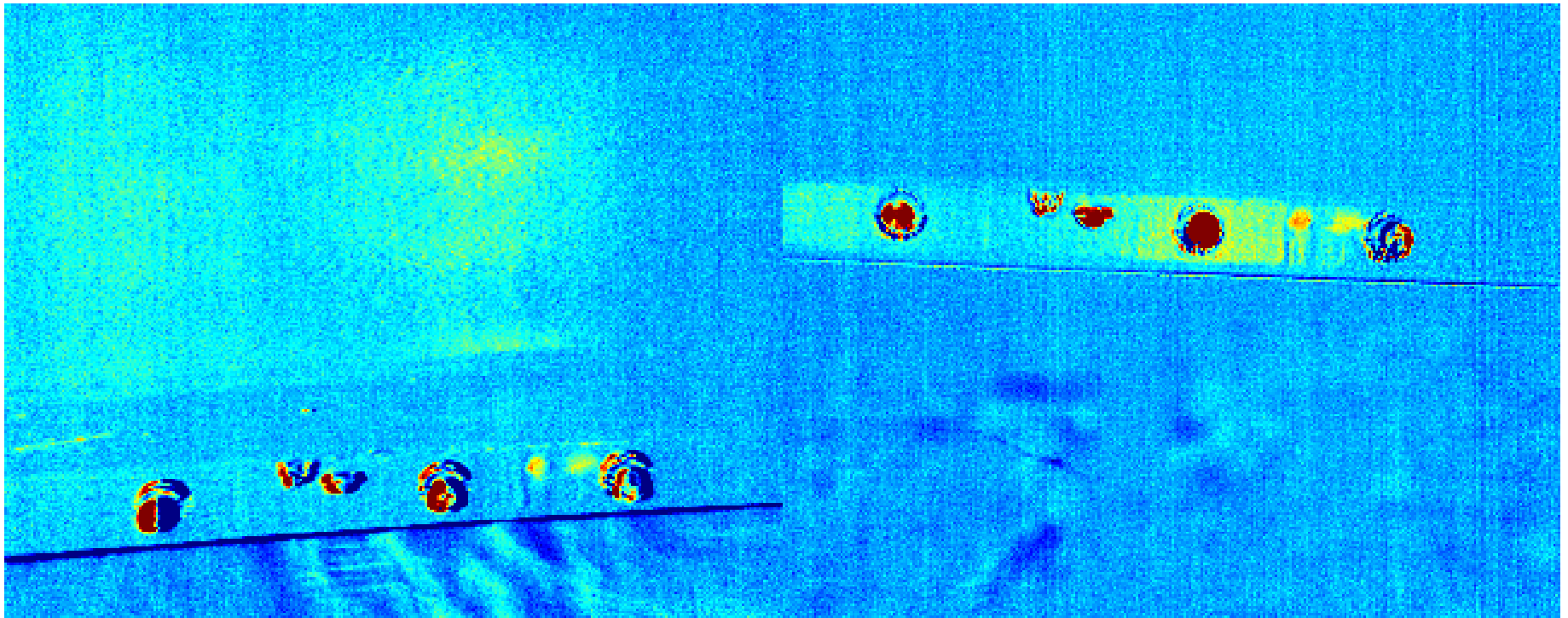
Testing Results (Web-Flange Weld)



▶ Differences in Platforms

Man-Lift

Snooper Truck



Conclusions

- Advantages
 - IR-CIS allows for detection of coatings defects using non-destructive techniques
 - Results are able to be verified by using traditional destructive testing
 - Fast real time results
- Disadvantages
 - Only able to scan small areas at a time (1 square foot)
 - Needs a relatively stable platform to work from
 - Not an industry accepted standard for coatings evaluations using the technique
 - Needs dedicated power source

Questions?

