CD Control Field Report

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Grade: test

Data Source: 50 scans recorded

1. Machine Configuration

Parameter	Value
Headbox Width	4800.0 mm
Actuator Width	50.0 mm
Machine Speed	700 m/min
Paper Path Length	210.0 m
Transport Delay	2 scans

2. Mapping Quality Assessment

Overall Mapping Progress: 99.2%
Zones Bumped: 96
Average Mapping Quality: 99.2%
Zones ≥80% Quality: 95
Reliability: 99.0%

Mapping Quality Status

Metric	Value	Status
Mapping Progress	99.2%	✓ Excellent

Shrinkage Model	Valid (coefficients: [-0.412528, 0.000636, 1.043587, -0.010920])	✓ **Valid**
Reliability	99.0%	✓ **High**

Mapping Heatmap

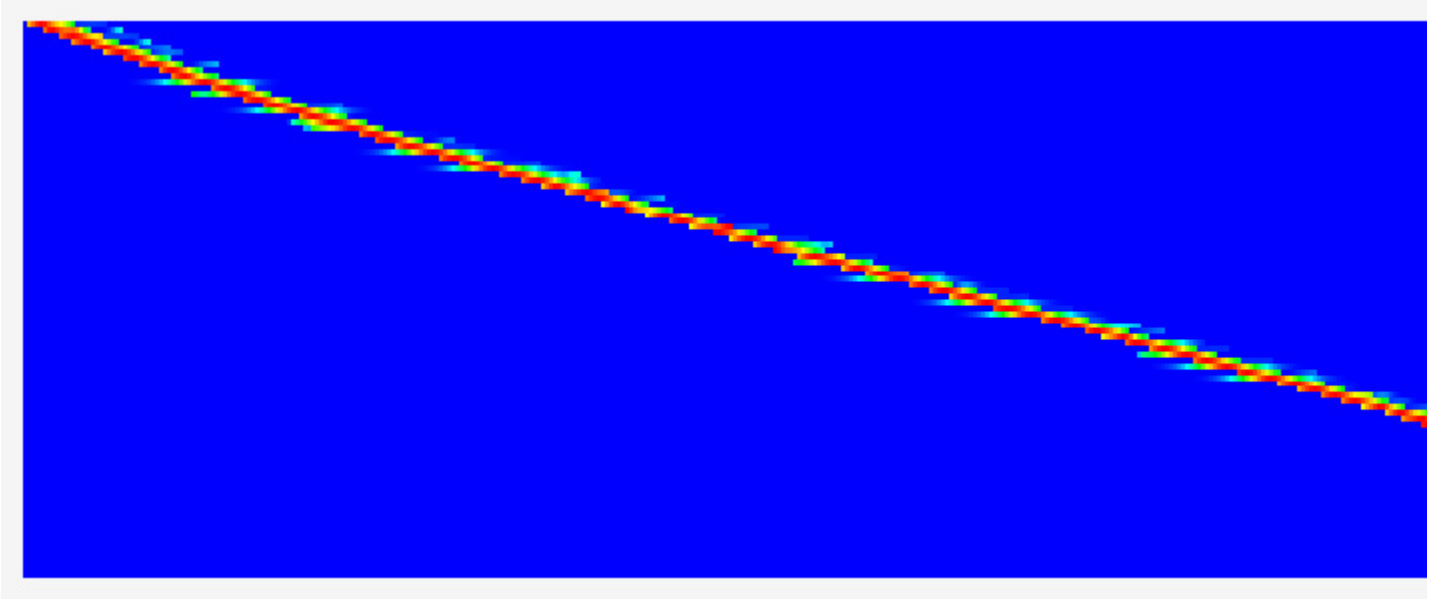

Figure 1: Mapping matrix showing actuator-to-databox relationships. Color intensity indicates response strength.

Quality Distribution

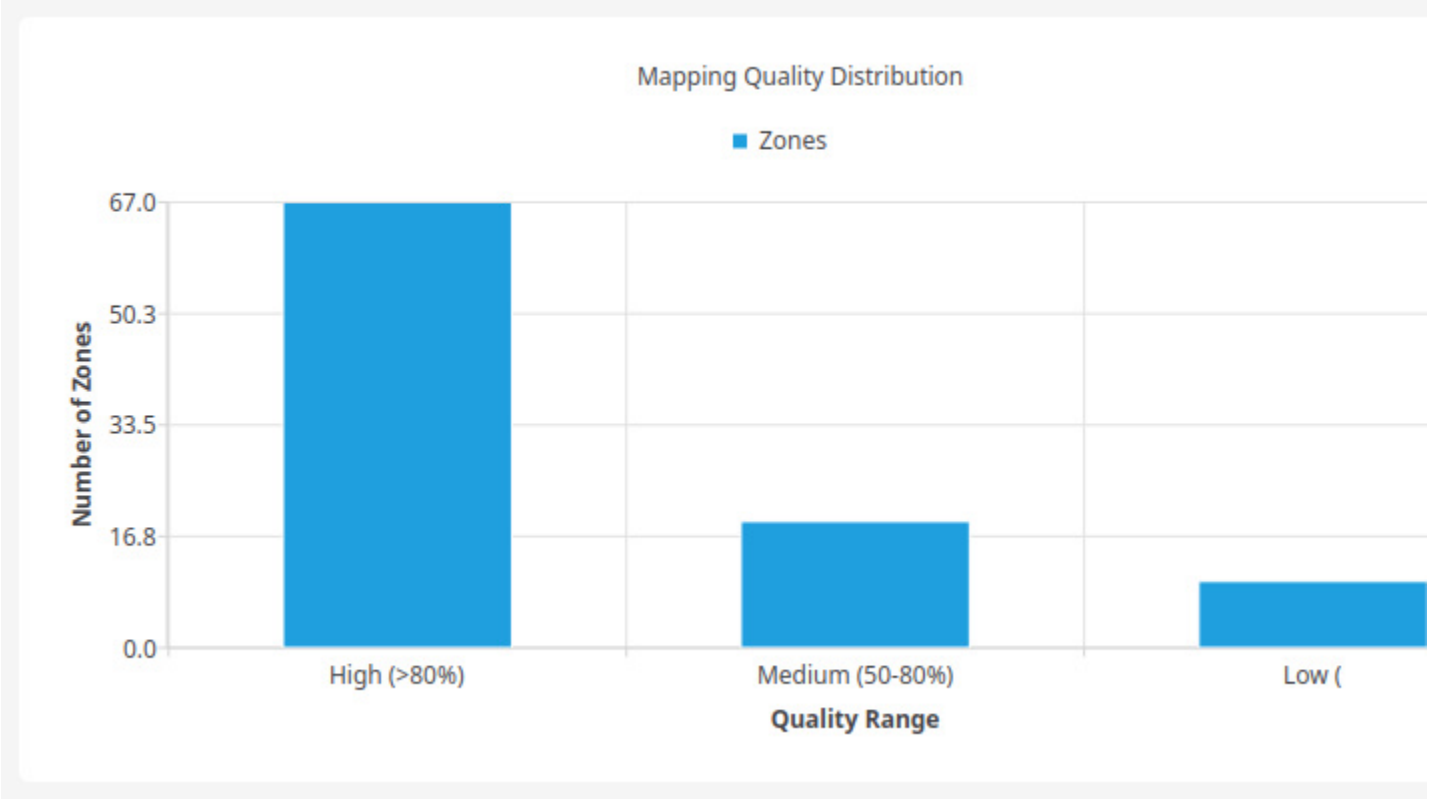

Figure 2: Distribution of mapping quality across zones. Shows the number of zones in high (>80%), medium (50-80%), and low (

3. Process Model Estimates

Parameter	Estimated Value	Unit
Process Gain	11.8030	db/%

Response Width (σ)	4.71	databoxes
Time Constant (τ)	2.00	scans
Controller Time Constant (Tc)	4.00	scans

4. Truth Value Comparison (Simulation)

Parameter	Estimated	Actual	Error	Status
Response Width	4.71	0.00	0.0%	✓
Centre Error (mean)	0.000 databoxes			✓
Centre Error (max)	0.000 databoxes			✓

5. Controller Tuning Parameters

Parameter	Value	Description
Prediction Horizon	3	Number of future scans to predict
Move Suppression (R)	17.50	Penalty on actuator moves
Bending Penalty (S)	1.65	Penalty on adjacent actuator differences
Error Weight (Q)	0.20	Weight on profile error
Max Delta U	9.43%	Maximum actuator move per scan

6. Wander Analysis

Average Wander (last 50 scans): -0.74 databoxes

Wander Std Dev: 4.10 databoxes

Dominant Frequency: 0.1923 cycles/scan

Frequency Confidence: 100.0%

Current Edge Ignore: 25 databoxes

Suggested Edge Ignore: 14 databoxes

Closed-Loop Identification Wander

Average CLID Wander (last 50 scans): -0.29 databoxes

CLID Wander Std Dev: 1.21 databoxes

Mean difference (CLID - edge): +0.36 databoxes

Std-dev of difference: 4.49 databoxes

Correlation (CLID vs edge): -0.17

A positive value means the sheet is shifted to the right. The CLID estimate is derived from the residual shift between the observed actuator response centroid and the expected S-curve centre during control moves.

Wander Trend

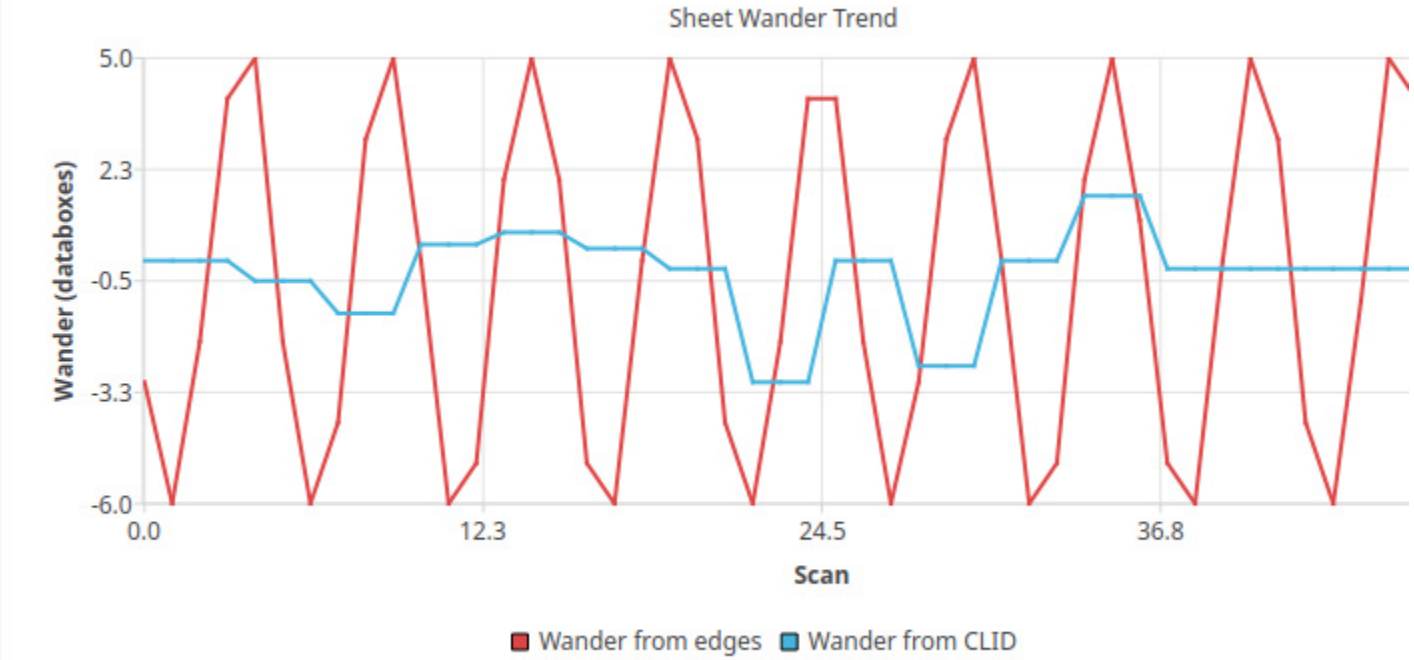

Figure 3: Sheet wander trend over the last 50 scans. Red = wander from left/right edges, blue = wander from closed-loop identification (CLID). Blue is plotted at 0 when the controller is not making qualifying moves.

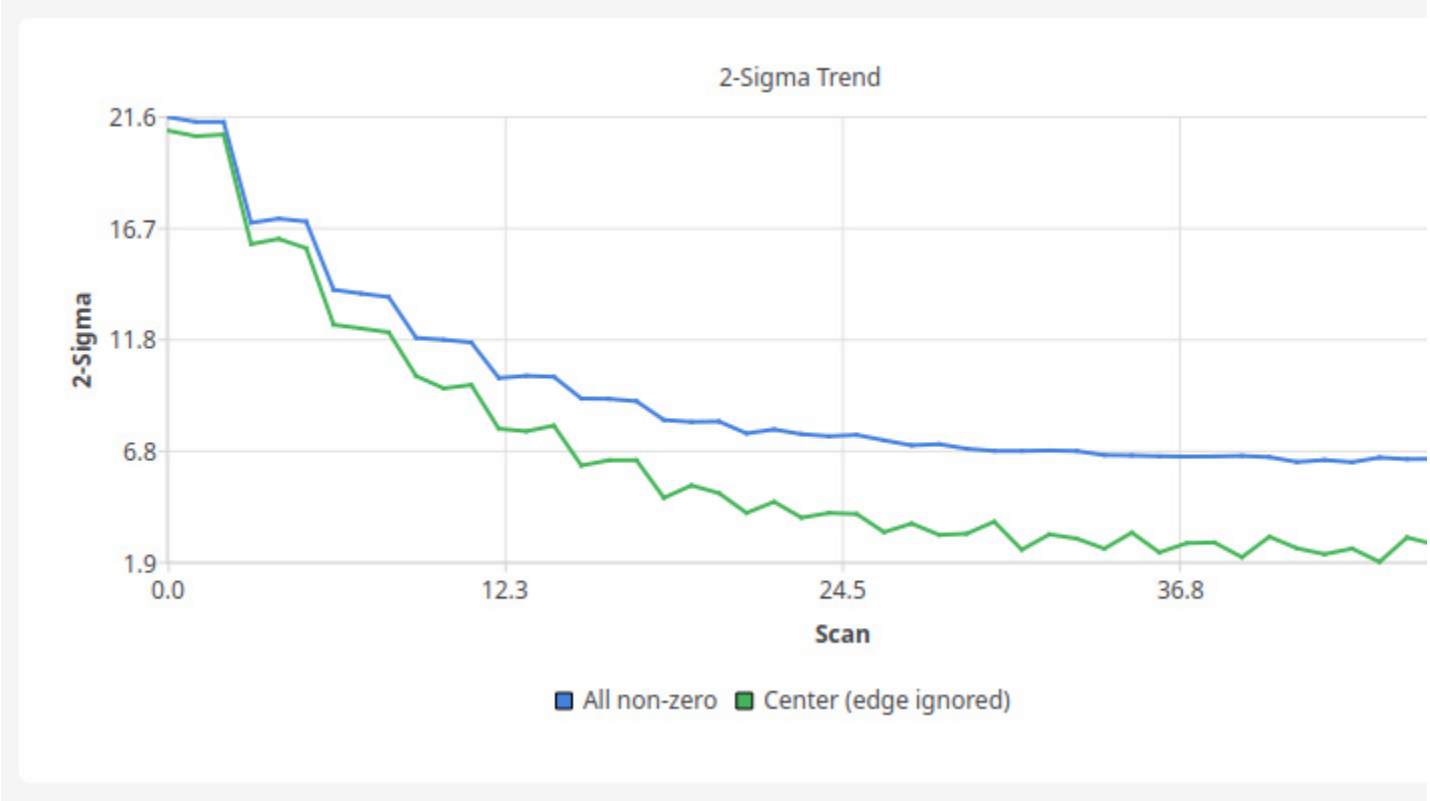

Figure 4: 2-Sigma profile spread over the last 50 scans. Lower values indicate better profile control.

7. Summary & Recommendations

Overall Assessment

- **Mapping Quality:** Excellent - Ready for production
- **Model Accuracy:** High accuracy - Model matches process well
- **Wander:** Stable sheet position
- **CLID Wander Agreement:** ⚠ Poor agreement between edge-based and CLID wander — verify sheet edge detection or shrinkage model

Recommendations for Field Operation

- ✓ Mapping is ready for production control
- ✓ Shrinkage model is valid and can be used for coordinate transformation
- ✓ Controller tuning parameters are appropriate
- ✓ Wander is within acceptable limits
- ✓ Edge-ignore margin: currently 25 db, suggested start value is **14 db** based on observed wander
- ✓ Save this grade configuration for future use
- ✓ Monitor profile std during control to verify performance

Report generated by automap4 CD Control System

For technical support, contact: [Your Support Contact]

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