

Reducing Site NCR Costs by \$1.6M Through Quality System Transformation

Executive Summary

Recurring site non-conformances (NCRs), customer complaints, product damage, and installation issues were generating significant rework costs, replacement expenses, and operational inefficiencies across multiple projects.

Through a comprehensive quality transformation initiative, I led the development of preventive quality systems focused on root cause elimination, standardized inspections, accountability controls, and stronger communication between manufacturing and site operations.

By transitioning the organization from a reactive quality model to a preventive quality governance framework, annual non-recoverable site costs were reduced from approximately **\$2.0 million to \$400,000**, generating an estimated **\$1.6 million in annual savings** while improving customer satisfaction, product quality, and operational reliability.

Business Environment

- Commercial facade, curtain wall, window wall, and railing manufacturing
 - Multi-project construction environment
 - High customer quality expectations
 - Cross-functional coordination between Engineering, Quality, Production, Shipping, Scheduling, Purchasing, and Site Operations
 - Complex installation schedules with significant financial exposure to quality failures
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Business Challenge

The organization experienced recurring site NCRs involving:

- Surface scratches
- Handling damage
- Product defects
- Missing components
- Installation-related quality issues
- Customer complaints
- Product replacements
- Site rework activities

These issues generated substantial costs through:

- Replacement manufacturing
- Expedited shipments
- Site labor
- Service calls

- Installation delays
- Customer dissatisfaction

Historical data indicated that many site issues were not installation failures but originated earlier within manufacturing, handling, packaging, and shipment preparation processes.

Financial Impact

- Annual Site Quality Costs: Approximately \$2,000,000
 - NCR Volume: High
 - Customer Complaints: Recurring
 - Quality Approach: Reactive
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Root Cause Analysis

A detailed review of customer complaints, NCR records, production data, and site feedback was conducted using structured problem-solving methodologies.

Tools Utilized

- 5 Whys Analysis
- Fishbone (Ishikawa) Diagrams
- Pareto Analysis
- Gemba Walks
- Cross-Functional Reviews
- Site Feedback Analysis

Key Findings

The investigation revealed that a significant percentage of site issues originated during manufacturing and handling activities rather than during installation.

Major contributing factors included:

- Lack of standardized end-of-line inspections
 - Inconsistent quality ownership
 - Insufficient communication between site and production teams
 - Limited accountability before shipment release
 - Weak feedback mechanisms for recurring issues
 - Inconsistent defect prevention practices
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Improvement Strategy

Rather than treating NCRs individually, I approached the challenge as a system-wide quality management issue.

The transformation focused on:

1. Preventing defects at the source.
 2. Improving accountability throughout production.
 3. Creating closed-loop communication between site and manufacturing.
 4. Standardizing quality inspection processes.
 5. Strengthening corrective and preventive action systems.
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Solution Implemented

1. End-of-Line Quality Standardization

Developed and implemented standardized inspection procedures covering:

- Product appearance
- Surface quality
- Component verification
- Packaging readiness
- Shipment release requirements

2. Final QC Sign-Off Program

Established a formal quality release process requiring documented approval before products could be shipped.

This created clear ownership and accountability for product quality.

3. SOP Development and Standardization

Developed and implemented quality-focused Standard Operating Procedures for:

- Product inspection
- Cleaning requirements
- Handling practices
- Packaging standards
- Shipment preparation

4. Cross-Functional Quality Governance

Created stronger collaboration between:

- Production
- Quality
- Engineering
- Shipping
- Scheduling
- Site Operations

to ensure rapid resolution of quality concerns.

5. Site-to-Plant Feedback System

Established a structured communication process allowing site teams to quickly report issues and ensure corrective actions were implemented at the manufacturing source.

6. Corrective Action and 8D Framework

Implemented structured problem-solving processes including:

- Root Cause Analysis
- Corrective Actions
- Preventive Actions
- Verification Activities
- Sustainability Reviews

to prevent repeat failures.

Quantified Results

Performance Metric	Before	After	Improvement
Annual Site Costs	\$2,000,000	\$400,000	80% Reduction
Annual Savings	\$0	\$1,600,000	Significant Cost Avoidance
NCR Frequency	High	Significantly Reduced	Major Improvement
Customer Complaints	Recurring	Reduced	Improved Customer Satisfaction
Quality Performance	Reactive	Preventive	Sustainable Improvement
Site Reliability	Inconsistent	Stable	Improved Execution

Business Impact

Financial Impact

- Reduced annual non-recoverable site costs by approximately \$1.6 million.
- Reduced replacement manufacturing costs.
- Reduced service and rework expenses.
- Improved project profitability.

Operational Impact

- Improved product quality before shipment.
- Reduced repeat quality issues.
- Improved coordination between departments.
- Improved site execution reliability.

Customer Impact

- Improved customer satisfaction.
 - Reduced complaint frequency.
 - Faster issue resolution.
 - Increased confidence in delivered products.
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Sustainability Measures

To maintain long-term performance improvements, the following controls were implemented:

- Standardized quality inspection procedures
 - Final QC sign-off requirements
 - Site feedback reporting process
 - Corrective action tracking system
 - Quality KPI monitoring
 - Periodic quality audits
 - Continuous improvement reviews
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Leadership Lessons Learned

Prevention Is More Effective Than Correction

Preventing defects at the source is significantly less costly than managing failures in the field.

Quality Must Be Owned at the Source

Sustainable quality improvement occurs when accountability exists throughout the manufacturing process.

Data Drives Better Decisions

Using structured RCA methodologies enables organizations to focus on root causes rather than symptoms.

Communication Creates Reliability

Strong collaboration between manufacturing and site teams is critical for reducing recurring quality issues.

Conclusion

This initiative transformed the organization's quality management approach from reactive defect management to preventive quality governance. Through standardized inspections, stronger accountability systems, structured problem solving, and cross-functional collaboration, annual site quality costs were reduced by approximately **\$1.6 million** while improving customer satisfaction, operational performance, and long-term reliability.

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Manufacturing Excellence | Quality Systems | Continuous Improvement | Root Cause Analysis | Operational Excellence