Process Wrapped in Culture Leads PRO-TEC’s Quest for Performance Excellence and Innovation

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Key Concepts

- Why Baldrige
- Learning Opportunities
- Our Company
- Company Culture
- Approach to Leadership
- Lessons Learned
How We Found Baldrige

ISO and QS System

Traditional Business System Model

- Root Cause Analysis
- Interim Actions
- Corrective Actions
- Systematic Continuous Improvement
Where We Are Today

Continuous Improvement Business Model

- Root Cause Analysis
- Interim Actions
- Corrective Actions
- Systematic Continuous Improvement
Maturity Level – KSF [Cat. #]

- Growth – Looking Back (green)
- Seeking – 1st MBNQA (orange)
- Innovation – BAR (blue)
- KEY: Criteria Scoring Ranges {1-6}
Our Company

1990 joint venture between U. S. Steel and Kobe Steel to meet corrosion-resistant steel demand

- Leipsic, OH
- 1,000,000-ton capacity
Global Strategy

Participation in world’s first global platform

Facility & resource investment
Continuous improvement
Social contribution
Joint development
AHSS & UHSS Applications

Typical BIW Vehicle - '05 '08 Models

- Side Sill: GA 590, 780, & 980 MPa
- Piller: GA 780 & 980 MPa
- Front Side Member: GA 590 & 780 MPa
- Side Sill: GA 590, 780, & 980 MPa
- Cross Member: GA 590, 780, & 980 MPa

Generic Grade Mechanical Property

- TS (MPa)
- YP (MPa)

AHSS [since 1999]
UHSS [since 2004]
Issue: Chemistry variation causes large variation of mechanical property

Concept: Apply different annealing cycle based on chemistry variation

Developed adaptive annealing cycles with chemistry ranges defined by regression equation derived from design of experiment modeling

Example of Stdev. of Tensile Strength (TS) for 590Y (AHSS)
30% reduction for Standard Deviation of Tensile Strength
Before adaptive annealing: 26 Mpa
After adaptive annealing: 18 Mpa (Please see graphs)

Improved product yield from baseline of <85% (in 2004) to ~95% (current) due to reduced material property variability

Increased capacity to produce 590Y AHSS for new customer applications [4Q'03 2,500 t/mo. >> 1Q'07 14,000 tons/mo.]

Replicated approach to 2nd coating line and shared concept with Parents & USS-HDG. Now in 5th cycle of refinement, using same approach with each new product development.
Next Challenge:
Generation of Coating Line Automation Pre-Set Values

Issue:
The proliferation of annealing cycles due to the development of AHSS made accurate generation of pre-set values increasingly difficult.

Goals:
1) Decrease the effort required to maintain current pre-set tables
2) Increase the accuracy of values generated for temper rolling
3) Decrease variability in finished product
4) Provide a model to drive CI in other processes

Results:
1) Replaced look-up tables (about 14,000 lines of code) with regression models (about 1,500)
2) With only original analysis and one feedback cycle:
   - Reduced Stdev by avg. of 60%
   - Increased R^2 by avg. of 245%
3) Created toolkit to update regression equations without the need to re-do the analysis

Outcomes:
Applied approach to all anneal cycles, replicated to 2nd coating line, and shared concept with Parents & USS-HDG Partners.
Customer-Focused Trend

- Reliable Operations (*blue*)
- Improving Quality (*red*)
- Making Difficult Stuff (*green*)

### Customer-Focused Trend

- **CGL-2**
- **AHSS**
- **7xCE**
- **UHSS**
- **Pre-Heater**

- **Design Capacity**

- **Production / Design Capacity (%)**
- **Value-Added Product-Mix (%)**
- **Milestones**
- **Customer Claims (PPM)**

### Milestones

- **1993**
- **1994**
- **1995**
- **1996**
- **1997**
- **1998**
- **1999**
- **2000**
- **2001**
- **2002**
- **2003**
- **2004**
- **2005**
- **2006**
- **2007**
- **2008**

### Parts Per Million (PPM)

- **0**
- **2,000**
- **4,000**
- **6,000**
- **8,000**
- **10,000**
- **12,000**
Contributing to a Sustainable Competitive Advantage

Figure 7.1a1-4 - Relationship of Value-Added Growth to Improved Proceeds (Technical Innovation & Product Dev.)

Positive Trend Regarding Value-Added Differentiation!

Figure 7.1a1-5 - PRO-TEC Share of U.S. HDG Market for AHSS Production (Technical Innovation & Product Dev.)

Industry Leader Since Inception of AHSS in 1999!
Our Culture

• Self-directed work teams
• All Associates are salaried
• Promotions occur from within
To foster human potential, a spirit of cooperation, and technical innovation for the betterment of our industry, Associates, and community.
Vision

**BE**
- Totally committed to personal safety and wellness.
- Recognized as industry technology leader in both product and process.
- Consistently profitable.

**DO**
- Provide on-time delivery with world-class quality.
- Develop/maintain world-class facility and business systems.
- Maintain high standard for community citizenship and service.

**HAVE**
- A highly skilled, engaged workforce committed to ongoing performance excellence.
- Optimal utilization of production capacity and capability.
- Valuable vendor/supplier relationships.
**Core Values**

**Integrity**
We abide by the highest standard of moral and ethical behavior.

**Honesty**
There is truth in our words and sincerity in our actions.

**Willingness to Serve**
We feel a duty to help others and to mentor.

**Effective Communicator**
We want to understand first and then strive to be understood.

**Humility**
We are confident and humble.

**Trust**
Our stakeholders can rely on us to do the right thing.

**Respect**
We appreciate the strength of individuals and value diversity.
Concept of Boundaries

Provide basis to make decisions
Freedom to be self-directed
Freedom to be innovative
Freedom to grow

“Processes Wrapped in Culture” ensures quality by establishing broad boundaries within which our Associates are free to practice ORA and Innovate!
Culture Map

- Reinforce, Encourage, Reinstruct
- I-to-I Methods
- Determine Key Factors of Engagement

Strengthen ORA

- Associates
- Improve

ORA Capable

- Right
- Associates

Teach ORA

- Associates
- Trained

Use ORA

- Resource Experts (Lifelines)
- Goals/Performance Mgmt. System
- Balanced Scorecard (Run, Change-the-Business)
- Work the Plan

- Selection Criteria
- Hiring Process
- Team Interviews

On-the-Job Training
- QES Mgmt. System (Job-Specific Work Instructions)
- Job Expectations
Everyone Is a Leader

Leadership is safety

Leadership is service

Leadership is trust
Leadership System

Strategic Position
Innovation Leader in Coated Steel

Mission
To foster human potential, a spirit of cooperation, and technical innovation for the betterment of our industry, Associates, and community.

Key Success Factors
- Customer Service
- Associate Quality of Life
- Technical Innovation & Product Development
- System Reliability
- Good Citizenship
- Long-term Viability

ORA
1. Decide What's Important
2. Set Goals that Lead
3. Align Systems
4. Work the Plan
5. Innovate Purposefully
6. Step Back

Values
- Honesty
- Integrity
- Willingness to Serve
- Effective Communicator
- Respect
- Trust
- Humility

Owners

Public

Suppliers

Community
## Continuous Improvement and Innovation

**Figure P.2-2 – Continuous Improvement Methods (I-to-I)**

### Attributes

<table>
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<tbody>
<tr>
<td>QES, Associate Orientation, ORA</td>
<td>Associate Surveys &amp; Evaluations</td>
<td>“Run-the-Business” Balanced Scorecard (BSC)</td>
<td>Procedure Change</td>
<td>ORA – &quot;We Just Fix It!&quot;</td>
<td>Associate</td>
<td>Huddles, 7:15 Meeting / MP2</td>
<td>Safety Audits &amp; Conversations</td>
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<td>Technical Training &amp; Vendor Support</td>
<td>Reliability, Safety</td>
<td>Preventive / Corrective Actions</td>
<td>Engineering Change</td>
<td>Subject Matter Experts (SME)</td>
<td>SME, Department Initiatives (6-D)</td>
<td>Staff Meetings, QES, Bulletins, I-to-I Lite</td>
<td>IP Status Updates &amp; Outcomes</td>
</tr>
<tr>
<td>QES, Team Training</td>
<td>Preventive / Corrective Actions</td>
<td>“Change-the-Business” BSC</td>
<td>Team-Based Change</td>
<td>I-to-I Resource Committee (RC)</td>
<td>I-to-I PAR Team</td>
<td>PMM Presentation, Bulletins, QES</td>
<td>PAR Feedback &amp; Updates to RC</td>
</tr>
<tr>
<td>Strategic Planning Process</td>
<td>Budgets, Resource Allocation</td>
<td>Capital-Budgeted Change</td>
<td>Capital-Budgeted Change</td>
<td>Leadership Team (LT)</td>
<td>SPP – Initiatives (Six Disciplines)</td>
<td>Tactical Team &amp; Communication Mgs.</td>
<td>Initiative Status &amp; Update by 6-D</td>
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### Process Redesign

- + Complexity -
  - Technical Resources
  - Associate Responsibility
  - I-to-I Teams

**Continuous Improvement and Innovation**

- Process Redesign
- Continuous Improvement
- Innovation

**(see Area to Address 1.1 for description of this symbol)**
Aligning the Organization from the Top-Down

- **Mission / Values** (Decades)
- **Strategic Position** (10+ Years)
- **Vision** (10 Years)
- **Key Success Factors**
- **Change-the-Business Initiatives**
- **Run-the-Business Initiatives**
- **Individual Projects**
- **IPs**

**Set the Course (Flight Plan)**

**What Needs to Get Done and by Whom (Accountability)**

**IPs = Individual Plans**

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**PRO-TEC COATING COMPANY**
Results

- 99% internal promotions
- No layoffs
- 99% internal promotions
- No layoffs
- 0.6% absenteeism
- 0.5% turnover
- 0.6% absenteeism
- 0.5% turnover
- 70% of Associates have education beyond high school
- 47 degrees earned while working at PRO-TEC
- World-class safety performance
Our journey has just begun....
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<tr>
<th>Criteria:</th>
<th>Benefits:</th>
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<tr>
<td>• Mission, Vision, and core values are strategic</td>
<td>✔ Helps define, perpetuate, &amp; foster ORA</td>
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<td>• Documented systems, processes, &amp; policies</td>
<td>✔ Embraces change &amp; is a lens for decisions</td>
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<td>• Communication process with two-way information flow</td>
<td>✔ Creates boundaries for our Associates</td>
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<td>• Deploying strategic planning &amp; action plans</td>
<td>✔ Allows freedom to practice ORA &amp; innovate</td>
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<td>• Customer &amp; market focus, voice of customer</td>
<td>✔ Demonstrates operational transparency</td>
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<td>• Capability &amp; capacity of workforce, core competency</td>
<td>✔ Gives clear line-of-sight to goals &amp; objectives</td>
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<tr>
<td>• <strong>Overall organizational business model</strong></td>
<td>✔ Ensures alignment, integration, &amp; collaboration</td>
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<td></td>
<td>✔ Fulfills vision by change-the-business initiatives</td>
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<td>✔ Identifies 1st-to-market opportunity (value-added)</td>
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<td>✔ Attains a sustainable competitive advantage</td>
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<td>✔ Positions for transfer from idled USS facilities</td>
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<td>✔ Determines out-sourced return opportunities</td>
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<td>✔ Means to be “audit-ready” every day</td>
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<td>✔ Enhances Stakeholder trust!</td>
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