Demonstration Project of Manufacturing Extension Operational Assessment Engagements

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Explanation of Assessment Methods

- There are many different methods for assessing companies for improvement.
- Constraints
  - Little knowledge of company or people
  - Limited amount of time
  - Language barrier
- Basic questionnaire to guide conversation and experience of assessor.
• A successful family owned and operated business
• High level of customer service delivering within 24 hours of order placement
• Focus on solutions, not selling chemicals
• Strong relationships with suppliers
Very good process control
Very well organized and clean factory
1. Use a methodology designed to meet the unique challenges of family businesses.
   – Family Business Assessment
     • Key outputs are:
       – Strategic Plan
       – Succession Planning
       – Exit Strategy
     • Protect the value of your business for you and your family
     • To meet your personal and business goals
2. Develop company performance measures

ISO 9001 Section 5 Management Responsibility

• 5.4.1 Quality Objectives
  – Top management shall ensure quality objectives
    » Alternative names are *business objectives*, *scorecard goals*, *key measures*, and *performance targets*
  – Objectives shall be measurable
  – Objectives shall be consistent with your Quality Policy
• Integrated manufacturer of architectural metal products
• High growth rate
• Continually introduces new products
• Markets to leading international architects
• Stringent quality and performance requirements
• 97% On-Time Delivery
• Assessment focused on manufacturing issues, not pre-sales or pre-production information flow
• H-D is in the beginning stages of 5S for workplace organization and standardization
Observations - Strengths

- Optimization program at Coil Slitting operation broke a bottleneck, and resulting in significant cost savings.
- Paint application and adhesion.
  - Quick changeover for paint color
- Reduced changeover times in Roll Forming – improved existing equipment and purchased new equipment.
Recommendations

• Value Stream Mapping
  – To understand manufacturing lead time
    • VA/NVA ratios
    • Impact of inventory on lead time and its hinderance to flow
  – Sustainability Analysis
    • Add supplies, chemicals, energy inputs/outputs to quantify carbon footprint (life cycle analysis)
Exhibit 2: Water Use Materials Line

- Water Source 1
- Water Source 2
- Effluent
- Wastewater Treatment System
- Regulations
- Federal
- State
- Local
- Milling
- Parts Washing
- Surface Preparation
- Metal Finishing
- Rinsing
- Assembly

Water Used = 416,000 gallons per day
Water Needed = 241,000 gallons per day
Water Wasted = 175,000 gallons per day
Overall Equipment Effectiveness

OEE = Availability x Performance x Quality Rate

• Machine AVAILABILITY
  – Breakdowns
  – Set-ups and adjustment losses

• Machine PERFORMANCE
  – Idling and minor stoppages
  – Running at reduced speeds

• Product QUALITY
  – Quality defect and rework losses
- recommendations

• Plant layout and material flow analysis
• 5S
  – Sort & Shine – nice job plant wide
    • Clean and little clutter
  – Now focus on the workplace using Set-In-Order step
    • A place for everything and everything in its place
• Successful medium size company providing engineering designed steel buildings and mining structures
• Growing quickly and adding product complexity
• Very good design and pre-production package development
• Each job is custom
Observations

- Process are robust and capable
- Due to growth, added complexity and new products
  - Very congested due to space limitations
  - Internal material logistics is difficult
1. Plant layout and Material Flow Analysis
   - This may have some short term benefits, but is strategic facility and material storage & handling planning

**FIGURE:** This is an example of a spaghetti diagram. The diagram got its name because of how it resembles a pile of tangled noodles. It shows a movement path in a room and also is used as a waste observation tool.
2. 5S Workplace Organization and Standardization
   - There is significant opportunity for productivity improvements with 5S
3. Make full use of your ISO 9001 Quality Management System by developing a continuous improvement program based on a standard approach to problem solving.
   - How to identify problems
   - Prioritize problems and match resources
   - Standard problem solving methodology
**Strengths**
- Calidad premio – mejor de las competidores
- Capacidad de ingeniería
- Servicio rápido

**Opportunities**
- Mantenimiento Productivo Total (TPM)
- Planificación con *kanban*
- Flujo continua en punteras
- Rebuild trust with employees
Mantenimiento Productivo Total (TPM)

- Arregla cada máquina a condición “como-nueva”.

- Diseñe un plan de mantenimiento preventivo alargue la vida de la máquina.

- Todos empleados trabajando en junto como un equipo a mantener las máquinas
Sample: Operator Duties

Daily Operator PM

- 1. Check coolant level through clear Plexiglas
- 2. Check heat exchanger fans (strings should be moving)
- 3. Check servo drive fans (string should be moving)
- 4. Check heat exchanger air filter (change when dark)
- 5. Check servo drive air filter (change when dark)
- 6. Check way lube reservoir (add when low)
- 7. Check main motor air filter (change when dark)
- 8. Check main motor cooling fan (string should move)
- 9. Check mist collector motor and air filter (change when dark)
- 10. Check bar feeder hydraulic motor air filter
- 11. Check bar feeder hydraulic oil level (add when low)
Jalar Planeando

Cuales bebidas necesitamos?
“Kanban” en Una Carreta
Kanban con Piezas Pequeñas
Punteras – Flujo Continuo

1. Proceso
2. Proceso
3. Proceso

Materiales → Proceso 1 → Proceso 2 → Proceso 3 → Productos
**Strengths**

- Clear strategy for growth
- Technical excellence
- Specialization of products

**Opportunities**

- Sistema de presupuesto
- Habla con datos – método científica en decisiones
- Continua 5S
5S – Organización del Lugar de Trabajo

Metodología para organizar, limpiar, desarrollar y sostener un ambiente de trabajo productivo.

1. Sort       Separar
2. Set in Order   Poner en Orden
3. Shine       Limpiar
4. Standardize Establezca los estándares para orden
5. Sustain    Sostener los estándares nuevos
A Place for Everything

What non-standard conditions do you see?
Controlled Work-In-Process
**Strengths**
- Strong business model: common components + design knowledge
- Team culture, flexibility of assignments
- Technical expertise, problem solvers

**Opportunities**
- Develop a management team to share the load
- Consider future ownership structure