

# 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







## - recommendations

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



## - recommendations

### 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

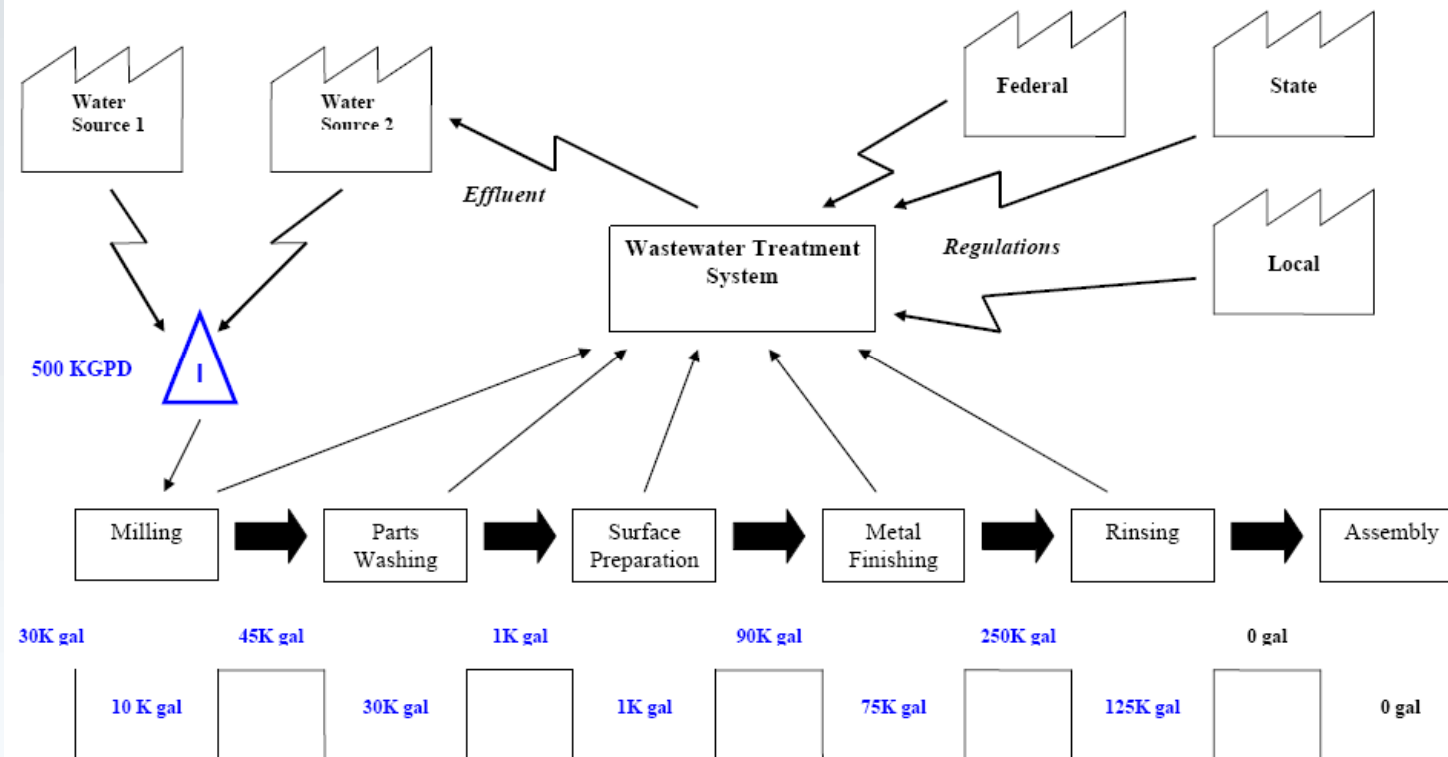


## Observations - Strengths

- 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.

- 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 Used = 416,000 gallons per day**  
**Water Needed = 241,000 gallons per day**  
**Water Wasted = 175,000 gallons per day**

## Overall Equipment Effectiveness

$OEE = \text{Availability} \times \text{Performance} \times \text{Quality Rate}$

- 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

- 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

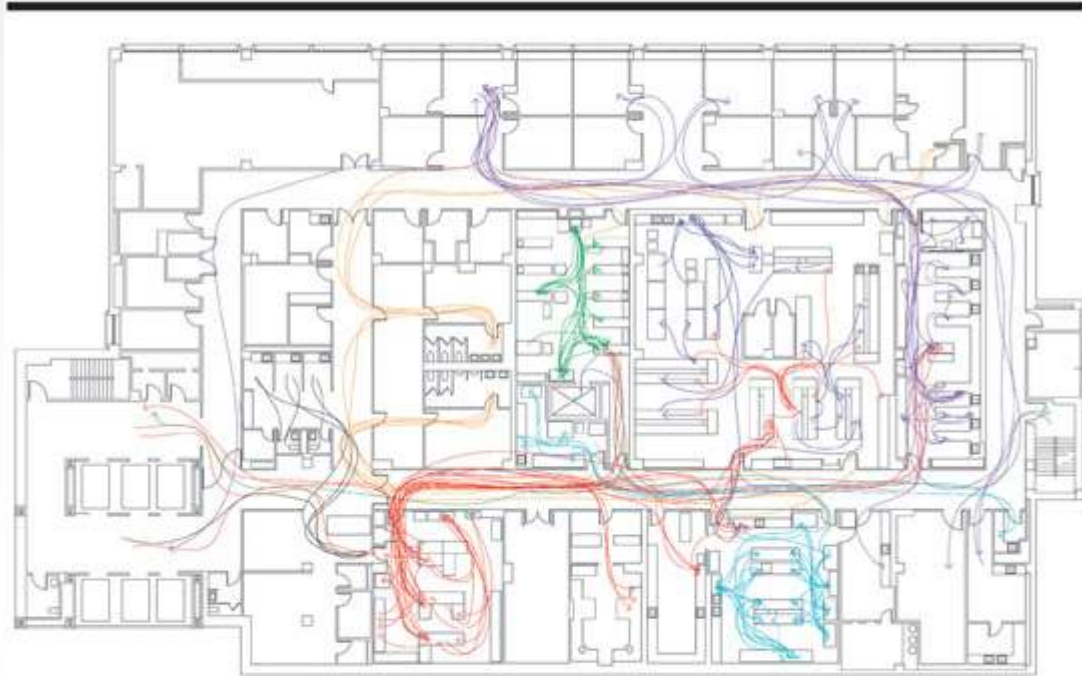


## Observations

- Process are robust and capable
- Due to growth, added complexity and new products
  - Very congested due to space limitations
  - Internal material logistics is difficult

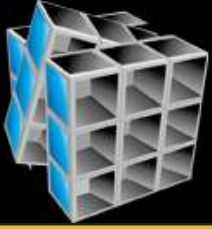


1. Plant layout and Material Flow Analysis
  - This may have some short term benefits, but is strategic facility and material storage & handling planning



**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



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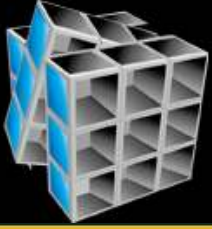
## Strengths

- Calidad premio – mejor de las competidores
- Capacidad de ingeniería
- Servicio rapido

## Opportunities

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



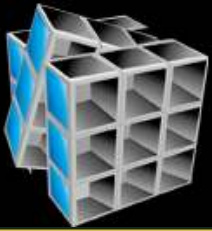


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# Mantenimiento Productivo Total (TPM)

- Arregla cada maquina 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





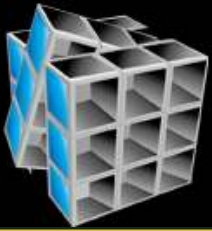
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# Sample: Operator Duties

## 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)



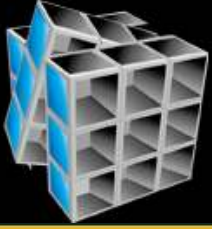


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# Jalar Planeando

Cuales bebidas  
necesitamos ?



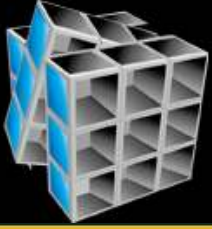


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# anban" en Una Carreta



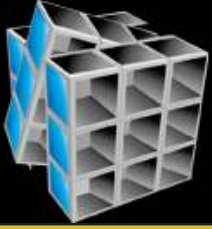




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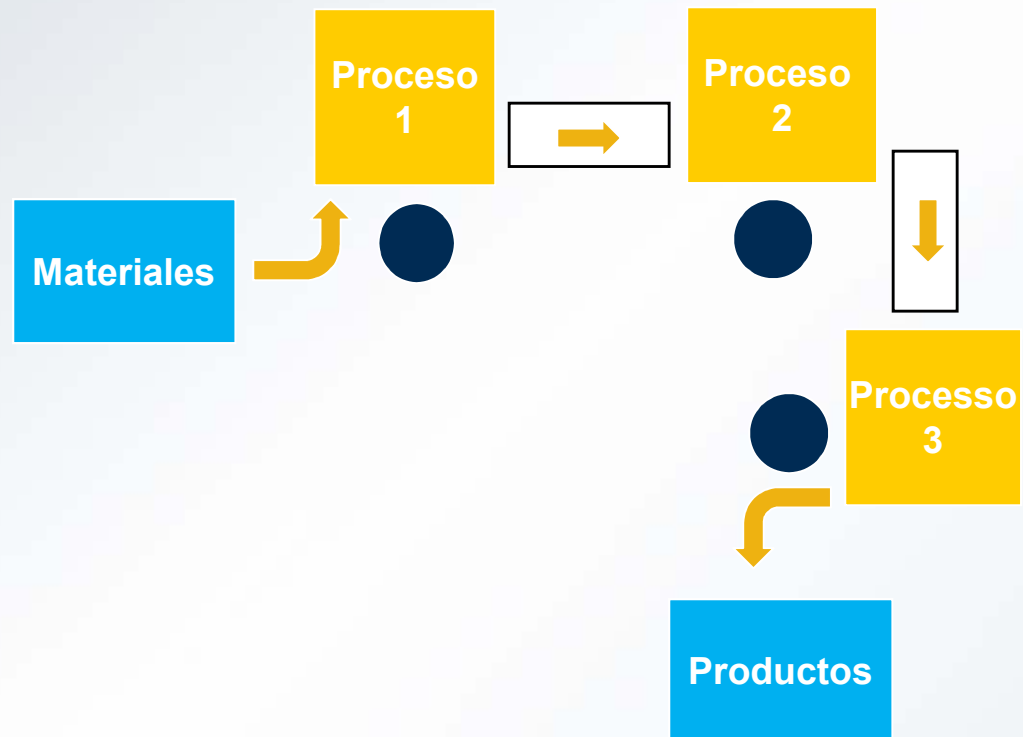
# Armar con Piezas Pequeñas





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# Punteras – Flujo Continuo



## *Strengths*

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

## *Opportunities*

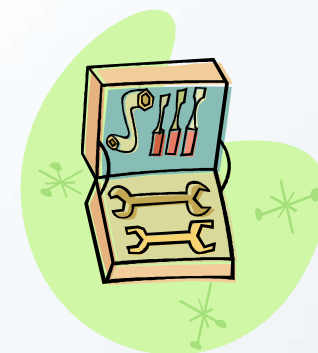
- Sistema de presupuesto
- Habla con datos – metodo cientifica en decisiones
- Continua 5S



# 5S – Organización del Lugar de Trabajo

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

- |    |              |   |
|----|--------------|---|
| 1. | Sort         | <i>Separar</i>                              |
| 2. | Set in Order | <i>Poner en Orden</i>                       |
| 3. | Shine        | <i>Limpiar</i>                              |
| 4. | Standardize  | <i>Establezca los estándares para orden</i> |
| 5. | Sustain      | <i>Sostener los estándares nuevos</i>       |



# 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