Enhancing Sustainability in a Dairy Processing Facility using KTT Tools

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Research Context

• Business environment of today:
  – Turbulent
  – Complex
  – Unpredictable

• Innovation = Competitive Advantage

• Rising environmental compliance and operational costs
  – Dairy processing research facility consumes large quantities of water, energy, and materials (chemicals)
Facility Addition of Recycling/Reuse Stream
e.g., Recycled energy, chemicals, water for re-use

Facility Inputs
E.g., energy, raw input material, water

Facility

Facility Outputs
E.g., waste energy, wastewater, unused material byproducts

Benefits of Pollution Prevention (P2)
• Cost-saving opportunities at process inputs AND outputs
• Improved environmental performance and sustainability
Barriers to P2 Implementation

• Technical vs. Organizational barriers
• Organizational readiness to change
  – Top management buy-in and sponsorship of change
  – Support from organizational policies / procedures
  – Performance measurement system
• Exclusion of relevant stakeholders in solving problems
  – Knowledge is abundant but underutilized
Tools Developed to Facilitate KTT

• Resource Mapping Tool
  – Simplifies complex facility information
  – Quantity and quality of energy, water, material use
  – Capable of tracking progress of P2 initiatives
Tools Developed to Facilitate KTT

• Interview Process with Facility Operators
  – Capture "on-the-ground" experience and perspectives
  – Identified areas of inefficient use of water, energy, and materials
Research Results

• Identification of P2 Opportunities
  – Water Conservation AND Product Spillage
  – Use of resource mapping tool in interviews helped stimulate employee idea generation

<table>
<thead>
<tr>
<th>Resource</th>
<th>Environmental Savings</th>
<th>Economic Savings</th>
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<tbody>
<tr>
<td>Water</td>
<td>17,500 m³/yr</td>
<td>$40,000 /yr</td>
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<tr>
<td>Chemicals</td>
<td>154,000 kg/yr</td>
<td>$54,000 /yr</td>
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Ongoing & Future Research

• Set up learning groups of facility employees to focus on **water conservation** and **product spillage**

• Use previously identified employee ideas to jumpstart P2 implementation

• Learning groups will help retain knowledge in P2 and develop a culture of learning and innovation at the organization level