Best Practice from Energy Management Leadership Award
(PT IKPP Tangerang Mill)

Presented by:
Kholisul Fatikhin
• PT IKPP Tangerang was founded in 1976 by Mr. Soetopo.
• Sinar Mas Group acquired 67% of Indah Kiat's total shares in 1986
• PT Indah Kiat Tangerang began to produce color paper in 1996 and successfully produce 100% color paper in 2006.
## Product Portfolio

### Main Product

<table>
<thead>
<tr>
<th>Color Paper</th>
<th>Fancy Color Paper</th>
<th>Stationery &amp; Art</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quran Paper</td>
<td>Bi-Color Card</td>
<td>Loose Leaf</td>
</tr>
<tr>
<td>High Smoothness Color Paper</td>
<td>Embossed</td>
<td>File Divider</td>
</tr>
<tr>
<td>WF Color Paper</td>
<td></td>
<td>Index Card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color photocopy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sticky Note</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Envelope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Memo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kokoru</td>
</tr>
</tbody>
</table>

![Color Paper Images](image1)

![Fancy Color Paper Images](image2)

![Stationery & Art Images](image3)
Energy Conservation Project

✓ E.C. Project Journey:

1991: Boiler Modification from single to Dual Burner (Diesel oil & Gas)

1995: Install Co-Gen (GT+ WHRB)

1996: Implement ISO 14001

2005: Install CFB 20 T/H

2006: Replace DC Drive to AC Drive

2008: Upgrade PLN Capacity

2009: Install BFB 15 T/H

What next ...

“We have to integrate the energy efficiency activity into day to day operation control”
PT IKPP Tangerang started to implement ISO 50001 in 2012
Certification date: November 2013

Why ISO 50001:

- Systematic Approach (PDCA)
- Support from Top Management
- Employee Involvement
- Tangible Benefit
- Support Network
ISO 50001 Process

- Energy policy
- Energy planning
- Implementation
- Checking
- Management review

Source: ISO 50001:2011
- Continual improvement in energy performance
- Ensure the availability of information and of necessary resources to achieve objectives and targets
- Comply with applicable legal requirements and other requirements
- Supports the purchase of energy efficient products and services and design for energy performance improvement
- Provides the framework for setting and reviewing energy objectives and targets
- Conduct energy review periodically.
ENERGY POLICY

COMPANY POLICY

PT. INDAH KAT PULP & PAPER Tbk. – TANGERANG MILL COMMITS TO:
- Meet or exceeding all customer and stakeholders expectations.
- Prevent environmental pollution and control the use of resources.
- Respect and protect human rights. Give positive and continuous benefit to local communities through communities development programs in the mill’s nearby area.
- Improve energy performance.
- Support the purchase of products, services and design that are energy-efficient.

The company will continuously improve its management system, set and review its objectives and targets periodically, evaluate its performance, comply with legal regulations and other relevant requirements, provide information and needed resources to achieve objectives and targets.

MILL MANAGER

ENERGY MANAGEMENT TEAM

ROLE & RESPONSIBILITY

<table>
<thead>
<tr>
<th>Responsible/Lead</th>
<th>Output Indicators</th>
<th>Win Budget Manager</th>
<th>Win Folder Manager</th>
<th>Win Human Resource Manager</th>
<th>Win Manager</th>
<th>Win Inside Manager</th>
<th>Win Outside Manager</th>
<th>Win PPA Manager</th>
<th>Win BPP Manager</th>
<th>Win HRD Manager</th>
<th>Win Legal Manager</th>
<th>Win Finance Manager</th>
<th>Win General Manager</th>
<th>Win Manager</th>
</tr>
</thead>
</table>
Energy Planning

- Analyze Energy Use & Consumption
  - Past and Present Energy use
  - Relevant variable affecting SEU
  - Performance

- Identify Areas Of Significant Energy Use & Consumption

- Identify Opportunities For Improving Energy Performance

- Energy Baseline
- EnPI(s)
- Objectives
- Targets
- Action Plan
Energy Planning

- Analyze energy use and consumption
- Identify the areas of **significant energy use**
- Identify other relevant variables affecting significant energy uses
Energy Planning

- Establish Energy Baseline & EnPI

- Establish an energy baseline(s) using the information in the initial energy review considering a data period suitable to the company

- Record methodology for determining and updating Baseline & EnPI
**Energy Planning**

- Identify, prioritize, and record opportunities for improving
- Establish, implement, and maintain action plans for achieving its objectives and targets

<table>
<thead>
<tr>
<th>ID</th>
<th>Description of Opportunity</th>
<th>Service</th>
<th>SEU</th>
<th>Estimated Annual Savings</th>
<th>Est. Inv. Cost (USD)</th>
<th>Payback (Year)</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reduce Air Compressor Pressure from 7 BarG to 6 BarG</td>
<td>Electric</td>
<td>SP/PM</td>
<td>154,244</td>
<td>18,794</td>
<td>3</td>
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<tr>
<td>2</td>
<td>Reduce Level Medium Chest SP from 90% to 60%</td>
<td>Electric</td>
<td>SP</td>
<td>2,746</td>
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<td></td>
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<tr>
<td>3</td>
<td>Install interlock Deflacke (Auto Off)</td>
<td>Electric</td>
<td>SP</td>
<td>29,290</td>
<td></td>
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<tr>
<td>4</td>
<td>Install interlock Pulper Chest Pump (Auto Off)</td>
<td>Electric</td>
<td>SP</td>
<td>13,730</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>5</td>
<td>Install daylight switch (Auto Off) Exhaust Fan No 5</td>
<td>Electric</td>
<td>PM1</td>
<td>54,918</td>
<td></td>
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</tr>
</tbody>
</table>

**Target 10% reduction by end of 2014**

**Define Criteria of Priority**

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**ENERGY CONSERVATION ACTION PLAN**

<table>
<thead>
<tr>
<th>ID</th>
<th>Action</th>
<th>Service</th>
<th>SEUs</th>
<th>Priority</th>
<th>Person Responsible</th>
<th>Target Completion Date</th>
<th>Verification Method</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Reduce Air Compressor Pressure from 7 BarG to 6 BarG</td>
<td>Electric</td>
<td>SP/PM</td>
<td>1</td>
<td>Ruiyan</td>
<td>20-Feb</td>
<td>Cek Power dg KW meter</td>
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<tr>
<td>2</td>
<td>Reduce Level Medium Chest SP from 90% to 60%</td>
<td>Electric</td>
<td>SP</td>
<td>1</td>
<td>J Nanang</td>
<td>5</td>
<td>Cek load-unload Time &amp; Amper</td>
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<td>3</td>
<td>Install interlock Deflacker (Auto Off)</td>
<td>Electric</td>
<td>SP</td>
<td>1</td>
<td></td>
<td></td>
<td>Cek fungsi dari Interlock</td>
</tr>
<tr>
<td>4</td>
<td>Install interlock Pulper Chest Pump (Auto Off)</td>
<td>Electric</td>
<td>SP</td>
<td>1</td>
<td></td>
<td></td>
<td>Cek fungsi dari Interlock</td>
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<tr>
<td>5</td>
<td>Install daylight switch (Auto Off) Exhaust Fan No 5</td>
<td>Electric</td>
<td>PM1</td>
<td>1</td>
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<td>Cek fungsi dari Interlock</td>
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<td></td>
<td>- Slapkan program pada DCS</td>
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<tr>
<td></td>
<td>- Tarik kabel dan modifikasi Panel</td>
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<td></td>
<td>- Pasang daylight switch</td>
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<td>Heryanto</td>
<td>20-Mar-13</td>
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<tr>
<td></td>
<td>- Tarik kabel dan modifikasi Panel</td>
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<td></td>
<td>Heryanto</td>
<td>4-Mar-13</td>
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</tr>
</tbody>
</table>

**Details Action Plan**

**method of verifying the results.**
Implementation

- **Daily Operation Control**

- **Energy Awareness Training & Communication**
  ensure SEU's operators are aware of the impact, actual or potential, with respect to energy use and consumption, of their activities.

- **Daily Critical O&M Control**
  establishing and setting criteria for the effective operation and maintenance of SEU

<table>
<thead>
<tr>
<th>SEU Area: Stock Preparation</th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SEU (Peralatan)</td>
<td>Parameter</td>
<td>Eng Units</td>
<td>Normal set point</td>
<td>Batas Atas</td>
<td>Batas Bawah</td>
<td>Frekuensi pemeriksaan</td>
<td>Cara Pengukuran</td>
<td>Pelaksana</td>
</tr>
<tr>
<td>Pulp (Agitator, Pompa)</td>
<td>Consistency</td>
<td>%</td>
<td>4.5</td>
<td>4.7</td>
<td>4.2</td>
<td>-</td>
<td>manual</td>
<td>Operator SP</td>
</tr>
<tr>
<td>Refiner</td>
<td>Pressure (inlet)</td>
<td>kg/cm</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>8x/Shift</td>
<td>manual - Pressure Gauge</td>
<td>Operator SP</td>
</tr>
<tr>
<td></td>
<td>Pressure (outlet)</td>
<td>kg/cm</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>8x/Shift</td>
<td>manual - Pressure Gauge</td>
<td>Operator SP</td>
</tr>
<tr>
<td></td>
<td>Consistency</td>
<td>%</td>
<td>4.5</td>
<td>4</td>
<td>5</td>
<td>3x/Shift</td>
<td>Auto - DCS</td>
<td>Operator SP</td>
</tr>
<tr>
<td></td>
<td>Load</td>
<td>A</td>
<td>50</td>
<td>50</td>
<td>40</td>
<td>8x/Shift</td>
<td>manual - Amper meter</td>
<td>Operator SP</td>
</tr>
</tbody>
</table>
Steam System Optimization
Implementation

- **Auto Stop Motor Trim Blower (idle)**
  - Each Trim blower motor around 10 – 18 KW, modify auto stop when machine not running

- **Upgrade line shaft to Sectional Drive**

- **Replace V-Belt With Timing Belt**
  - Replace V-belt Nash Pump with Timing Belt will eliminate slippery and reduce electric consumption, PM 3 Done 5 unit

- **Energy Monitoring System**
Employee Involvement

 ➤ Improvement Activity:

- Small Group Activity
- Skill Development Activity
- Employee suggestion System.
- TPM (5S)
✓ Energy Performance is tracked monthly compared to predicted energy performance (based on regression equation)

✓ Energy Team reviews the EnPIs to determine energy performance quarterly

✓ Preventative and Corrective action is also reviewed at that time

✓ Internal Audit conducted once a year
Management Review conducted once a year if any decisions or actions related to:

- Changes in the energy performance of the organization
- Changes to the energy policy
- Changes to the EnPIs
- Changes to objectives, targets or other elements of the EnMS, consistent with the organization’s commitment to continual improvement
- Changes to allocation of resources.
Energy Performance Indicator

Energy Actual (GJ) vs. Energy Prediction (GJ)

Baseline

ENERGY INTENSITY

<table>
<thead>
<tr>
<th>Year</th>
<th>GL/ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>9.32</td>
</tr>
<tr>
<td>2012</td>
<td>8.84</td>
</tr>
<tr>
<td>2013</td>
<td>8.53</td>
</tr>
<tr>
<td>2014</td>
<td>8.39</td>
</tr>
<tr>
<td>2015</td>
<td>7.91</td>
</tr>
</tbody>
</table>

CUSUM

428,834 GJ
Benefit to the Company:

- Gain global recognition for efficient energy management
- Demonstrate your clean energy leadership to investors, customers, and employees.
- Receive prestigious recognition for contributing a quality case study.
- Affirm your organization’s leadership in a global gathering of energy ministers and high-level international organizations.

Thank You