Delivering manufacturing excellence
November 14th, 2014
Mathias Makowski
Surfers Paradise
AGENDA

POYRY OVERVIEW
OPERATIONAL EXCELLENCE
HOW TO CLOSE THE GAP?
CASES AND EXAMPLES
**PÖYRY OVERVIEW**

**WE ARE CONSULTING AND ENGINEERING SPECIALISTS …**

<table>
<thead>
<tr>
<th>Today’s focus</th>
<th>Land &amp; forest</th>
<th>Wood products</th>
<th>Pulp, Paper, Packaging &amp; Hygiene</th>
<th>Energy</th>
<th>Chemicals and Biorefining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering services</td>
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<td>Operational excellence</td>
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</tr>
</tbody>
</table>
WITH A GLOBAL NETWORK OF 6,000+ EXPERTS AND OFFICES IN ABOUT 50 COUNTRIES
WE WORK ACROSS THE FOREST PRODUCTS VALUE CHAIN WITH INDUSTRY, BANKS & PRIVATE EQUITY

PÖYRY OVERVIEW

Industry
- Operational Excellence
- Strategy
- Markets
- BioFuture

Banks
- Pre-Feasibility / IM Support
- Commercial Due Diligence
- Technical Due Diligence
- After Financing Support

Private Equity
- Pre-Feasibility / IM Support
- Commercial Due Diligence
- Technical Due Diligence
- After Financing Support
AGENDA

POYRY OVERVIEW

OPERATIONAL EXCELLENCE

HOW TO CLOSE THE GAP?

CASES AND EXAMPLES
MANY WAYS TO IMPROVE CORPORATE PERFORMANCE

**Strategy**
- M&A
- Divestiture
- Products / Markets

**Assets**
- New assets
- Major upgrades
- Rebuilds

**Execution**
- Revised management system
- Improved skills
- Culture of continuous improvement

Competitive advantage:
- Strategic initiatives tend to reflect common industry trends
- Most organizations have similar assets
- The way in which organizations separate themselves from the pack is to maximize their effectiveness given their existing strategy and assets
WE DEFINE EXECUTION GAPS AS TARGET AND IMPROVEMENT METRICS. CLOSING THE GAPS IS WITHIN OUR CONTROL.

Reasons for an Ex-Gap

Process:
- Incomplete **management system infrastructure**.
- Either **too much data, not the right data** or it is not being used widely.
- Departments and levels of management are **not aligned**.
- Action and accountability process is often **informal** and **doesn’t get at root causes**.
- Prior process improvement projects were **not sustained**.

People:
- Supervisors lack disciplined approach to managing
- Insufficient people development & management skills
TYPICALLY HIGHER RELATIVE SAVINGS OPPORTUNITY FOR WOOD PRODUCTS OPERATIONS

Size of execution gap – identified vs. captured

Savings
% of revenue

Captured
Identified

Wood / Panel Products
Paper / Tissue Products

Mills

1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19

2  4  6  8  10  12  14

10
RECENT WOOD-PRODUCT PROJECTS SHOW THAT OE DELIVERS SIGNIFICANT FINANCIAL IMPACTS

Financial impact of recent wood-products projects

Wood-based panel mills

Sawmills

On average we capture more than within 5% of turnover

USD/m³

Average

Mill 1
Mill 2
Mill 3
Mill 4
Mill 5
Mill 6
Mill 7
Mill 8
Mill 9
Mill 10

Mill 11
Mill 12
Mill 13
Mill 14
Mill 15
Mill 16
Mill 17
Mill 18
Mill 19
Mill 20
Mill 21
Mill 22
Mill 23
Mill 24
Mill 25

USD/m³

Average

Mill 1
Mill 2
Mill 3
Mill 4
Mill 5
Mill 6
Mill 7
Mill 8
Mill 9
Mill 10

Mill 11
Mill 12
Mill 13
Mill 14
Mill 15
Mill 16
Mill 17
Mill 18
Mill 19
Mill 20
Mill 21
Mill 22
Mill 23
Mill 24
Mill 25

USD/m³

Average

Mill 1
Mill 2
Mill 3
Mill 4
Mill 5
Mill 6
Mill 7
Mill 8
Mill 9
Mill 10

Mill 11
Mill 12
Mill 13
Mill 14
Mill 15
Mill 16
Mill 17
Mill 18
Mill 19
Mill 20
Mill 21
Mill 22
Mill 23
Mill 24
Mill 25

USD/m³

Average

Mill 1
Mill 2
Mill 3
Mill 4
Mill 5
Mill 6
Mill 7
Mill 8
Mill 9
Mill 10

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Mill 12
Mill 13
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Mill 15
Mill 16
Mill 17
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Mill 21
Mill 22
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Mill 24
Mill 25

USD/m³

Average

Mill 1
Mill 2
Mill 3
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Mill 5
Mill 6
Mill 7
Mill 8
Mill 9
Mill 10

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USD/m³

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USD/m³

Average

Mill 1
Mill 2
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Mill 5
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Mill 7
Mill 8
Mill 9
Mill 10

Mill 11
Mill 12
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Mill 14
Mill 15
Mill 16
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Mill 18
Mill 19
Mill 20
Mill 21
Mill 22
Mill 23
Mill 24
Mill 25
OPERATIONAL EXCELLENCE IS A GLOBAL TOPIC WITH AROUND 150 INITIATIVES GLOBALLY
AGENDA

POYRY OVERVIEW
OPERATIONAL EXCELLENCE
HOW TO CLOSE THE GAP?
CASES AND EXAMPLES
IMPROVEMENT IN ANY BUSINESS PILLARS NEED TO BE SUPPORTED BY THE ORGANIZATION FOUNDATIONS

Recurring Opportunities

- Production
  - Yield
  - Quality & Value
  - Production Volume

- Supply Chain Management
  - Working Capital
  - Service Levels
  - Logistic costs

- Sales & Marketing
  - Strategic Pricing
  - Customers & Markets

Management Systems Capabilities & Behavior Organizational Design

Operational excellence typically conducted for each or combination of the pillars

The organization foundations need to be addressed to sustain performance
POYRY’S APPROACH COMBINES CREATING A PLATFORM AND ESTABLISHING A PROCESS TO SUSTAIN THE GAINS

<table>
<thead>
<tr>
<th>ISO</th>
<th>Six Sigma</th>
<th>Pöyry’s approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO provides a basic structure for capturing important data</td>
<td>Six Sigma provides a structured process for addressing key issues</td>
<td>Pöyry combines people and management skill development with the tools required to create an action-driven culture of issue identification and resolution</td>
</tr>
<tr>
<td>Lacks formal method for evaluation and follow up and does not promote action</td>
<td>Is not comprehensive of all issues and does not indicate when follow up is required</td>
<td></td>
</tr>
</tbody>
</table>
### Technical Advice and Best Practices Transfer is Often Not Enough to Sustain Better Performance Levels

<table>
<thead>
<tr>
<th><strong>Goal</strong></th>
<th><strong>Technical Advice, Best Practice (TA, BP)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduce a world-class management system to <strong>establish a continuous performance improvement</strong> culture at the mill</td>
<td><strong>Share possible ways to quick wins</strong> and to replace parts of existing practices.</td>
</tr>
<tr>
<td>Let the <strong>new management system</strong> “grow through and with” the existing <strong>one</strong>, in close cooperation with the client’s internal team.</td>
<td><strong>Introduce best practices</strong> and to provide technical advice with the leading technical specialists.</td>
</tr>
<tr>
<td><strong>At least 16 months</strong> of redesign of existing management system, implementation of changes and development of continuous improvement working practices</td>
<td>Focuses on providing specific technical solutions. Sustainability not given, no cultural change. <strong>Can support the performance improvement process</strong></td>
</tr>
</tbody>
</table>

Operational excellence focuses on improving performance of existing assets and systems while technical advice complements the process.
WE FOLLOW A TWO-PHASE APPROACH TO IDENTIFY AND PRIORITIZE AREAS OF IMPROVEMENT AND TO CLOSE THE GAP

<table>
<thead>
<tr>
<th>4-8 weeks</th>
<th>12-16 months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase I: Diagnostic</strong></td>
<td><strong>Phase II: Implementation</strong></td>
</tr>
<tr>
<td>Identify gaps</td>
<td>Develop platform</td>
</tr>
</tbody>
</table>

**Objectives**
- **System Review**
  - Financial Diagnostic
  - Management Process & System diagnostic
  - Technical Process Diagnostic
- **System Design**
  - Redesign of KPIs and management systems
  - Design team training and system rollout
- **Control & Capture**
  - Implementation of new management processes and information tools
  - Coaching and training of staff at all levels to utilize improved processes

**Result**
- **ExGAP**
  - Identification & prioritization of improvement areas
  - Quantification of recurring saving potential
- **Platform development**
  - Measurement process
  - Establishment of reporting tools
- **Establish & Sustain**
  - Capture of improved KPI results and financial impacts
DIAGNOSTIC PHASE WILL PROVIDE SIZE OF EXECUTION GAPS (EXGAP) FROM RESPECTIVE EXECUTION AREAS

Client example of execution gaps (ExGap) from each area:

- Productivity: 28%
- Packaging: 17%
- Density: 14%
- Sanding: 10%
- Rejects: 9%
- Resin: 8%
- Electricity Downtime: 7%
- Total opportunity: 100%
**STEPWISE APPROACH TO IMPLEMENT SUSTAINABLE CHANGE**

**Establish Indicators**
- % On Spec
- % Efficiency
- % Compliance

**Formal Data Capture**
- Operator Tallies
- Quality Control Checks
- Machine Outputs

**Report**
- KPI
- Critical Result Indicators
- Trends

**Managers’ Meeting**

**Operators**

**Action Plans**

**Sustainable Performance Improvement**
EACH BUSINESS AREA Follows a 3-STEP APPROACH. KEY SPB STAFF HAS OWNERSHIP & ACCOUNTABILITY TO ENSURE SUSTAINABILITY.

**1. System Design**
- Sessions facilitated by Pöyry OE team
- Team of 4-6 key personnel from the business/region areas, complemented by technical experts as required (lathes, operations, resin, etc.)
- Methodology training to ensure comprehension and consistency
- Joint development of processes, approaches, needed supporting management framework and KPIs

*Time Frame: 3-5 weeks per business area (depending on availability and logistics)*

**2. Tool Development**
- Led by design team members
- Design and customization of data collection process (method, frequency, responsibility)
- Integration into existing systems, development of reporting and meeting structure
- Emphasis on simplicity, and not creating more paperwork or bureaucracy

*Time Frame: 2-4 months per business area (some cross over into the control phase)*

**3. Control Phase**
- Phase led by design team, facilitated by Pöyry
- Coaching and training of personnel in effective usage of redesigned system
- Meetings management, development of action planning culture – Continuous Improvement!
- Focus on ensuring sustainability and achievement of financial impact targets

*Time Frame: typically one year*
AGENDA

POYRY OVERVIEW
OPERATIONAL EXCELLENCE
HOW TO CLOSE THE GAP?

CASES AND EXAMPLES
- SAWMILL
- PLYWOOD
### Background

- The client owns a sawmill in Europe with spruce and pine species
- Annual production of >200,000 m³

### Challenges

Client Consensus:

“We knew we could cut more in the sawmill and we thought the log yard could handle it, but the kilns just couldn’t dry it!”

### Pöyry’s approach

- Diagnostic and review of management systems
- Extensive implementation process and change management
PÖYRY REVIEWED AND IMPROVED THE MILL’S KPIs TO ENSURE SPECIFIC, MEASURABLE AND CONTROLLABLE PERFORMANCE

<table>
<thead>
<tr>
<th>Proposed Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build new kilns</td>
</tr>
<tr>
<td>Invest in additional fans, baffling, pipes, etc.</td>
</tr>
<tr>
<td>Locate a partner to dry additional volume</td>
</tr>
<tr>
<td>Increase sales of lower-value, green timber</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From old “result-based” system…</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSF</td>
</tr>
<tr>
<td>Production</td>
</tr>
<tr>
<td>Moisture Control</td>
</tr>
<tr>
<td>Results</td>
</tr>
<tr>
<td>m³ dried per week</td>
</tr>
<tr>
<td>“Not Too Wet”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>...to a revised KPI-based System</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSF</td>
</tr>
<tr>
<td>Production</td>
</tr>
<tr>
<td>Moisture Control</td>
</tr>
<tr>
<td>Quality</td>
</tr>
<tr>
<td>“Not Too Wet”</td>
</tr>
<tr>
<td>KPIs</td>
</tr>
<tr>
<td>Change Over Efficiency</td>
</tr>
<tr>
<td>Attainment to Drying Schedule</td>
</tr>
<tr>
<td>Capacity Utilization</td>
</tr>
<tr>
<td>Attainment to Steam Pressure Targets</td>
</tr>
<tr>
<td>Green Stacking Quality</td>
</tr>
<tr>
<td>Moisture Content on Spec - Hot</td>
</tr>
<tr>
<td>Dry Stacking Quality</td>
</tr>
<tr>
<td>Moisture Content on Spec - Planer</td>
</tr>
</tbody>
</table>
The KPIs are tracked and reported regularly...

**KILN PRODUCTION TALLY**

**Date In:** 10/30/2003

**Operator:** Doug Llewelyn

**KILN:** DOUBLE WELLONS

**Charge #:** 2-003

<table>
<thead>
<tr>
<th>CODE</th>
<th>DT REASON</th>
<th>MINUTES</th>
<th>COMMENTS</th>
<th>AP?</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>LIFT NOT AVAILABLE</td>
<td>5</td>
<td>DRIVER COULDN'T HEAR RADIO CALL</td>
<td>X</td>
</tr>
<tr>
<td>20</td>
<td>LIFT BROKEN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>SHORT TRACK BROKEN</td>
<td>14</td>
<td>LEFT RAIL OF LEFT TRACK HAS NO HINGE</td>
<td>X</td>
</tr>
<tr>
<td>40</td>
<td>BOILER - NO FLOW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>BOILER - CELL CLEANING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>BAFFLES BROKEN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>CAR OFF RAIL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>PACKS DUMPED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>MAINTENANCE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>OTHER</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL MINUTES DOWNTIME:** 19

**CAPACITY UTILIZATION**

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>L.</th>
<th>M.</th>
<th>N.</th>
<th>O.</th>
<th>P.</th>
<th>Q.</th>
<th>R.</th>
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<tbody>
<tr>
<td>1x6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8/10</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12/14</td>
<td>13</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
<td>16</td>
<td>29</td>
</tr>
</tbody>
</table>

**UTILIZATION SUMMARY**

- **TOTAL LLF (SUM OF "R"):** 9,040
- **TARGET LLF:** 9,040
- **% CAPACITY UTILIZATION:** 92%

Key Performance Indicators are reported on every kiln charge.

Specific, accurate accounting of downtime issues are tracked, and corrective action plans are developed.
Mill no longer gauges performance based on production volume. Now focus is on the key factors which drive production.

### Weekly Kiln KPI Summary Report

#### KILN PRODUCTION

**Production Results**

<table>
<thead>
<tr>
<th>BF DRIED</th>
<th>PREVIOUS</th>
<th>WEEK OF</th>
<th>IMPROVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,147,374</td>
<td>2,493,098</td>
<td>2,643,104</td>
<td>23.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Primary Length Retention</th>
<th>PREVIOUS</th>
<th>WEEK OF</th>
<th>IMPROVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>90.03%</td>
<td>90.58%</td>
<td>84.35%</td>
<td>-5.21%</td>
</tr>
</tbody>
</table>

#### Key Performance Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>BASELINE</th>
<th>TARGET</th>
<th>PREVIOUS</th>
<th>IMPROVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Attainment to Drying Schedule</td>
<td>85.8%</td>
<td>100%</td>
<td>108.4%</td>
<td>109.9%</td>
</tr>
<tr>
<td>% Attainment to Target Steam Pressure</td>
<td>43.0%</td>
<td>100%</td>
<td>96.7%</td>
<td>97.5%</td>
</tr>
<tr>
<td>% Capacity Utilization</td>
<td>92.0%</td>
<td>100%</td>
<td>92.9%</td>
<td>93.1%</td>
</tr>
<tr>
<td>% Change-over Efficiency</td>
<td>30.6%</td>
<td>100%</td>
<td>64.8%</td>
<td>74.2%</td>
</tr>
</tbody>
</table>

#### Downtime

<table>
<thead>
<tr>
<th>Cause</th>
<th>Minutes</th>
<th># Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lift Not Available</td>
<td>59</td>
<td>2</td>
</tr>
<tr>
<td>Lift Broken</td>
<td>94</td>
<td>1</td>
</tr>
<tr>
<td>Boiler - Cell Cleaning</td>
<td>33</td>
<td>2</td>
</tr>
<tr>
<td>Boiler - No Flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Track Broken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baffles Broken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car Off Rail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packs Dumped</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Downtime**

| Minutes | 166 |

#### KILN QVR

<table>
<thead>
<tr>
<th>Key Performance Indicators</th>
<th>BASELINE</th>
<th>TARGET</th>
<th>PREVIOUS</th>
<th>IMPROVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Stacking Quality</td>
<td>51.4%</td>
<td>100%</td>
<td>86.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>% Green Yarding Quality</td>
<td>47.1%</td>
<td>100%</td>
<td>80.0%</td>
<td>75.0%</td>
</tr>
<tr>
<td>% Rough Dry Yarding Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Moisture Content in Target Range</td>
<td>76.2%</td>
<td>90%</td>
<td>76.1%</td>
<td>75.4%</td>
</tr>
</tbody>
</table>

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CASES AND EXAMPLES – SAWMILL

...WHICH ALLOWS THE MILL TO MEASURE THE IMPROVEMENT OVER TIME
KPI REPORTING ALSO ENABLES PROBLEM SOLVING AND FORMAL ACTION PLANNING

### Action Request Form

<table>
<thead>
<tr>
<th>Date</th>
<th>Submitted by</th>
<th>Action Plan Report by KPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-Feb-04</td>
<td>TERRY TAYLOR</td>
<td></td>
</tr>
</tbody>
</table>

#### Issue No: 12

**KSF:** Value

**Issue:** Operators are downgrading studs due to poorly understood knot rules

**Owner:** Jacob Johnson

**Date:** Nov 17, 05

**Status:** On-Going

**Action Description:** Develop a training aid board that hangs over the grading station that clearly lays out grading rules affected by knot size. Conduct training utilizing new training aid.

#### Issue No: 37

**KSF:** Value

**Issue:** Trimmer Scanner is misreading Economy grade mark and dropping into the wrong bin.

**Owner:** Guss Buckman

**Date:** Nov 24, 05

**Status:** On-Going

**Action Description:** Install a motor attached to floor baffles to automatically raise and lower them, rather than doing it by hand. This could cut our change over time in half.

---

- **Root cause issues are identified**
- **Formal actions are developed to address the root cause**
- **Responsibility is assigned to a person with a due date for completion**
- **Issue is followed up until it no longer effects performance**
AN IMPROVED TOOL WAS DEVELOPED TO HIGHLIGHT DRYING INCONSISTENCIES

Improved evaluation tools capture moisture content by zone/area of the kiln, and highlight drying inconsistencies.
OPERATIONAL EXCELLENCE DELIVERED A SUSTAINABLE CONSISTENCY IN DRYING METRICS…

CASES AND EXAMPLES – SAWMILL

Before Implementation

After Implementation

Too Wet

Excess Deviation

Too Dry
...AS WELL AS OVERALL PRODUCTION OUTPUT

From a weekly production of 5,000m³…

- Primary performance indicator was measured in m³/week
- Moisture content checked as “not too wet” as caught in the planer mill – too late to impact drying.
- Operators are proficient at operation, but not aware of performance or engaged in improvement.

To a weekly production of 6,000m³

- Operators can tell you:
  - 4 Production KPIs
  - 4 Quality KPIs
- Operators understand and own targets. Targets are 100%.
- Crew held accountable. Supervisors engage hourly operators.
- Action plans developed daily/weekly to address shortfalls.

+28% production improvement

Improved drying quality
Decreased trim loss
Higher grade out
AGENDA

PORYR OVERVIEW
OPERATIONAL EXCELLENCE
HOW TO CLOSE THE GAP?

CASES AND EXAMPLES
- SAWMILL
- PLYWOOD
### Background

- The client operates a plywood mill in South East Asia
- Annual production of $>100\,000\,\text{m}^3$

### Challenges

- Quality together with a lot of other process data is measured, however the information is not used to drive improvement
- No system in place to ensure that operators make the correct decisions about veneer quality and waste
- Strong focus on volume instead of quality

### Pöyry’s approach

- Extensive diagnostic including technical experts to establish best practices
- Implementation of an action driven performance management system
### CASES AND EXAMPLES – PLYWOOD

#### DRYER MANAGEMENT PROCESS

<table>
<thead>
<tr>
<th>Focus</th>
<th>Target</th>
<th>Evaluate</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSF</td>
<td>KPIs</td>
<td>Results Indicators</td>
<td>Measure</td>
</tr>
</tbody>
</table>

1. **Production**
   - Efficiency
   - Out-feed Volume
   - In-feed Volume
   - Downtime
2. **Recovery**
   - Reject Accuracy
   - Recovery %
3. **Quality**
   - MC On-Spec
   - Veneer On-Size
   - Dryer Condition
4. **Value**
   - Clipping Accuracy

#### Dryer capacity is not know or used to maximize dryer utilization and throughput.
#### Veneer MC measurement practices are not sufficient to provide consistent, actionable data.
#### No indicators in place to ensure that “wet” veneer is not unnecessarily redried.
MAJORITY OF THE DRY VENEERS ARE OVER-DRIED

**CASES AND EXAMPLES – PLYWOOD**

The majority of the dry veneers are over-dried. The diagram shows the moisture content in percent for two different glue types. For Glue type 1, the target range is 91% over-dried with 65% of the samples falling within this range. For Glue type 2, the target range is 65% over-dried with 91% of the samples falling within this range.

1 The lowest scale of MC meter is “below 6”, hence the samples that are shown as 5 should be read “below 6”; Sample size 160
### MANAGEMENT REPORTS FOCUSED ON OUTPUT AND VOLUME INSTEAD OF UNDERLYING VALUE DRIVERS

#### Volume driven
- **Unknown underlying KPIs**
- **Not linked to actions**

#### CASES AND EXAMPLES – PLYWOOD

#### TABLE: Management Reports

**DATE: 30/9/2014**

<table>
<thead>
<tr>
<th>LOG BLOCK STOCK</th>
<th>PCS</th>
<th>VOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOCKS - 10, 9, 8, 7, 6</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>BLOCKS - 4, 3</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>LOGS</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. LOG INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE DIAMETER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. LOG SPECIES RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>KP/KR</td>
</tr>
<tr>
<td>Meranti</td>
</tr>
<tr>
<td>MLH</td>
</tr>
<tr>
<td>NJGB</td>
</tr>
<tr>
<td>PlantedTimber</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. BLOCK OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>10ft</td>
</tr>
<tr>
<td>3ft</td>
</tr>
<tr>
<td>4ft</td>
</tr>
<tr>
<td>6ft</td>
</tr>
<tr>
<td>7ft</td>
</tr>
<tr>
<td>8.5ft</td>
</tr>
<tr>
<td>8ft</td>
</tr>
<tr>
<td>9ft</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. CUTTING YIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>137.57%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. LATHE INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. LATHE OUTPUT (VENEER)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VeneerStack-SC-DSYME-1-BE-SR</td>
</tr>
<tr>
<td>VeneerStack-SC-DSYME-2-BE-SR</td>
</tr>
<tr>
<td>VeneerStack-SC-DSYME-2-BE-SR</td>
</tr>
<tr>
<td>VeneerStack-SC-DSYME-3-BE-SR</td>
</tr>
<tr>
<td>VeneerStack-SC-GC-CH-1-BE-SR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. PEELING YIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>97.63%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. DRYER INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. NET DRYER</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL (NET+ROLLER DRYER)</td>
</tr>
<tr>
<td>88.99%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. ROLLER DRYER</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. DRYING YIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>88.99%</td>
</tr>
</tbody>
</table>

- **Comment:** This doesn’t sell the message. At a glance, looks like they have more than enough data points.
SHIFTING REPORTING FROM VOLUME-DRIVEN TO VALUE- AND ACTION-DRIVEN

CASES AND EXAMPLES – PLYWOOD

**KPI Summary Report**

<table>
<thead>
<tr>
<th>Quality Indicators</th>
<th>Crew A</th>
<th>Crew B</th>
<th>Crew C</th>
<th>Baseline</th>
<th>Improvement Over Baseline</th>
<th>Action Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Logs On-Length</td>
<td>91.7%</td>
<td>91.7%</td>
<td>91.7%</td>
<td>94.3%</td>
<td>▲ 8.7%</td>
<td></td>
</tr>
<tr>
<td>% Debarking Quality</td>
<td>90.0%</td>
<td>90.0%</td>
<td>90.0%</td>
<td>85.3%</td>
<td>▼ -2.2%</td>
<td></td>
</tr>
<tr>
<td>% Log Diameter On-Spec</td>
<td>70.4%</td>
<td>60.0%</td>
<td>62.2%</td>
<td>51.5%</td>
<td>▲ 4.4%</td>
<td></td>
</tr>
<tr>
<td>% DJI Log Diameter On-Spec</td>
<td>31.6%</td>
<td>95.0%</td>
<td>86.4%</td>
<td>87.6%</td>
<td>▲ 0.7%</td>
<td></td>
</tr>
<tr>
<td>% RT Log Diameter On-Spec</td>
<td>67.4%</td>
<td>71.3%</td>
<td>69.4%</td>
<td>70.7%</td>
<td>▼ -1.9%</td>
<td></td>
</tr>
<tr>
<td>% Green MFG Defect Free</td>
<td>88.0%</td>
<td>82.0%</td>
<td>90.0%</td>
<td>52.2%</td>
<td>▲ 9.5%</td>
<td>1</td>
</tr>
<tr>
<td>% Boards On-Length</td>
<td>100.0%</td>
<td>98.1%</td>
<td>98.9%</td>
<td>99.7%</td>
<td>▼ -0.7%</td>
<td>1</td>
</tr>
<tr>
<td>% Stacking Quality</td>
<td>73.3%</td>
<td>76.9%</td>
<td>75.1%</td>
<td>85.2%</td>
<td>▼ -15.8%</td>
<td></td>
</tr>
</tbody>
</table>

**Comment**: Check out slide #4 in the ones I sent – this can augment the reporting story. Right now this one tabular report is a little bland.
### Operational Excellence

- It is significant – in all industries and market conditions
  - Often >5% of revenue in wood products operations
- Gap size is often unknown
- It is a potential competitive advantage
- It does not require large capital spending
- It is controllable through improved management systems and change processes
The leading advisor to the world’s capital and resource intensive industries. Clients choose us for the sharpness of our insight, deep industry expertise and proven track record – because results count.

Pöyry Management Consulting