

<p><b>Developing Best in Class Organizations</b></p>	<p style="text-align: center;">   <b>The Operational Excellence Institute</b>  <a href="http://www.theopexinstitute.com">www.theopexinstitute.com</a> </p>	<p style="text-align: center;"> <b>Page 1 of 7</b>  <b>Rev 1.0</b> </p>
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## Optimizing Paper Mill Operations Training Course

### Introduction

The success of every company depends of each employee's understanding of the key business components. Employee training and development will unlock the companies' profitability and reliability. When people, processes, and technology work together as a team developing practical solutions, companies can maximize profitability and assets in a sustainable manner. Training and development are an investment in future success - give yourself and your employees the keys to success

It is strategically important that your team understands the fundamentals of unit optimization. This is the difference between being in the best quartile of operational excellence and being in the last quartile. There is vast difference in the operational ability of operating companies and most benchmarking studies have confirmed this gap in operational abilities.

Whether you have a team of new or seasoned employees, an introduction or review of these concepts are greatly beneficial in closing the gap if you are not in the best quartile or maintaining a leadership position. Most studies show that a continuous reinforcement of best practices in operational safety principles is the most effective way to obtain the desired results. Training and learning should be an ongoing continuous lifelong goal.

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### **Course Objective**

Today's pulp and operations are under increasing pressure to increase safety, reliability, reduce costs and improve profits. Engineers and production professionals need practical training to assist their companies to accomplish these goals. Generally, universities teach fundamental concepts, and then the professional will need to learn to apply these concepts to their field.

This training course will use practical technical know-how to guide participants in these key concepts with Case Studies. These key concepts may be utilized right away in their operations to increase profits. Our Senior Technical Professional will share his 25+ years of engineering experience with the students to show them how to optimize the operations at their facility. Many time process improvements require only small amount of capital with exceptionally large return on investment (ROI)

### **Key Points**

- A new understanding of process control points for pulp and paper mill operations
- A better understanding of key parameters and needs of upstream and downstream processes for each part of a papermill
- Methods and operating procedures for delivering highest quality pulp and water to the paper machines for highest paper production rates.
- New insight from review of case studies
- New ways to positively impact mill profits
- How wood supply and chip quality affect overall mill operations, paper quality and profits.
- Profit and loss for management of byproduct Tall Oil and Turpentine

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## Course Syllabus

### I. Introduction

- A. Review of different type of papermill types/pulping operations
  - 1. Kraft
  - 2. Hardwood with soda digestion
  - 3. Groundwood
  - 4. Pulp products
  - 5. Other

### II. Fiber sources, trees, woodchips

- A. . Wood supply life cycle and supply dynamics
  - 1. Important things to know
  - 2. Southern Kraft
    - a. Unique management dynamics
  - 3. Western U.S. softwood
    - a. Unique management dynamics
    - b. Ponderosa Pine
    - c. Unique management dynamics
    - d. Other Western softwoods
  - 4. Things to know, life cycle review
    - a. Hardwood
    - b. Wood supply in the U.S
      - 1. Hardwood
      - 2. Softwood
      - 3. EU wood supply
        - a. Hardwood
        - b. Softwood
        - c. Eucalyptus
- B. U.S. wood chips for export
  - 1. Harvesting
  - 2. Changes in properties during transport
  - 3. Quality and how to affect/control quality

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4. Bark removal
5. Chipping equipment
6. Differences between U. S. export chips and wood chips made in a U.S. papermill

- C. Practical morphology review and yields for Softwood
- D. Practical morphology review and yields for hardwood

- E. How to optimize wood supply to a mill
  1. Chip thickness measurement and control
  2. Modern chipping equipment
  3. Bark
  4. Sand, rocks, metal unwanted material
  5. Less desirable wood species in your regional “wood basket”

### III. Pulping

- A. Batch digesters
  1. Chemistry and how to control quality and yields
- B. Kamyr/continuous
- C. Groundwood
  1. Newsprint
  2. Other
- D. Sulfite process
- E. Pulp mill operations
- F. Washing
- G. Liquor generation and handling
- H. Stock treating and storage
- I. Pumping in the pulp mill
- J. Corrosion and its control
- K. How to optimize pulping operations
  1. Liquor and liquor cycle
  2. Basics of generation
  3. Control points for lab data
  4. Black liquor concentrators

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5. How to optimize liquor generation and chemistry

IV. Black liquor recovery

1. Soda losses
  - a. Control points
  - b. Areas to focus on
  - c. Multiple Effect evaporators

V. White liquor

- A. White liquor cycle
- B. Lime and lime kilns
- C. Recausticizing operations
- D. Slaking
  1. Residence time and detriments to reactions in this area
- E. Dregs
- F. Soda losses in white liquor production

VI. Byproduct recovery and sales

- A. Tall Oil
  1. Economics of burning vs. sales
  2. Acidulation
- B. Crude Sulfate Turpentine
  1. Optimize recovery
  2. Overall economics of additional profit from byproduct sales

V. Finishing

- A. Time and motion
  1. Scales, conveying
- B. Inventory control

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## Who Should Attend

- People who are making day to day decisions regarding operation, design, and economics of processing plants;
  1. 1<sup>st</sup> Line Operations personnel,
  2. Operation Supervisors,
  3. 1<sup>st</sup> Line Maintenance personnel,
  4. Maintenance Supervisors,
  5. Senior Plant Supervisors,
  6. Operations Engineers
  7. Process Support Engineers,
  8. Design Engineers,
  9. Cost Engineers
- Paper Mill Key People
  1. Papermill production engineers
  2. Pulp and paper Superintendents and Assistant Superintendents
  3. Papermill cost accountants
  4. Persons involved in the procurement of imported wood chips.
  5. Technical and lab professionals and technicians
  6. Production Supervisors
  7. Cost Accountants

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- People who are making day to day decisions regarding operation, design, maintenance, and economics of process industry plants.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding of process safety.
- Other professionals who desire a better understanding of the subject matter.

#### **What You Can Expect to Gain**

- A detailed understanding of papermill and pulp mill operations
- An understanding of process parameters that affect mill profits
- Methods to locate fiber, chemical, and profit losses in pulp and paper mills
- Numerous ideas to take back to your job to improve operations
- Gain an insight to optimization strategies