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Quality Programs Bring Savings For Potlatch, Boise Cascade

At the Fourth Annual Quality Leadership Symposium in Atlanta, Ga., Boise Cascade and Potlatch presented results of their recent quality improvement programs. Entitled, "Improving Competitive Position," the program focused on the pulp and paper industry. The symposium was sponsored by Qualpro, Inc., a Knoxville, Tenn. based consulting firm.

Improvements in groundwood optimization at Boise Cascade's De Ridder, La. plant are saving the company at least \$1.6 million annually in wood costs. Potlatch Corp.'s Northwest Paper Div. dramatically reduced coater downtime and reduced broke paper losses at its Cloquet, Minn. plant by improving efficiency on flying splices.

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Boise Cascade, Potlatch Report Major Quality Improvement Results

By Kathy Porter

ATLANTA, Ga.

Two major paper manufacturers discussed recent quality improvement successes at the Fourth Annual Quality Leadership Symposium here October 29-30. Focused on the pulp and paper industry, the symposium was entitled "Improving Competitive Position." Sponsored by Qualpro, Inc., a Knoxville, Tenn. based consulting firm, the event was highlighted by quality improvement presentations by Boise Cascade and Potlatch, Inc.

Through a series of studies and experiments, Qualpro helped Boise Cascade lower its wood costs by rethinking groundwood specifications, some of which had been based on myths and misconceptions. Boise Cascade's Richard Greer, quality coordinator; Stuart Martin, crane operator and vice president of local paper maker's union; and wood procure-

ment superintendent Jim McKnight composed of hourly workers and supervisors. Its mission was to improve the groundwood system by lowering the cost and time required to provide quality fiber to the groundwood mill. Changes implemented by the task force are saving the company at least \$1.6 million annually in wood costs, according to Greer.

The project began by assessing, correcting and standardizing the wood yard's methods of measuring incoming wood volume and quality. The task force also tested and disproved many long-held assumptions and "myths" about the effects of wood defects on pulp quality. Among its findings: broom ends don't increase shives; caffaces don't reduce unbleached brightness; diameter of wood doesn't affect strength properties; knots don't affect pulp quality.

The perception had been that older wood reduced unbleached brightness, and that only high quality wood could be used to produce high quality groundwood pulp. Tops had traditionally been used in linerboard production because they were considered too knotty and rough for groundwood. Experiments with various mixtures of tops and high quality wood revealed a 50/50 blend of the two kept quality and safety high while dramatically lowering costs.

Adjustments made by the task force have had virtually no detrimental effects on groundwood pulp quality, according to the study's findings. Unbleached brightness fell only .32, from 58.88 to 58.56. Pulp mullen average was 10.22 before

changes, and 10.37 afterward. On pulp tear, average was 25.39 before change, and 24.95 after.

Although changes in groundwood pulp quality were insignificant, average daily groundwood use fell from 946 cords before the task force to 638 cords after changes were implemented, for an annual savings of 100,000 cords.

Flying Splice Success

Bob Hershey, Vice President of manufacturing, and Tom Bolen, process control systems engineer at Potlatch Corp.'s Northwest Paper Div., also presented results of a quality improvement project. The company's Cloquet, Minn. plant makes 890 TPD of high quality coated

printing papers. In January 1991, it began working with Qualpro on five quality improvement projects. One focused on improving the efficiency of making flying splices at its off-machine coater.

For uniform coating quality and minimum downtime, paper reels must be threaded through the coater in a continuous process. Thus, individual rolls are spliced together to make an unbroken sheet.

Reels weigh about 20 tons, are 200 in. wide and are often over 100 in. diameter. Before the current reel expires, coater operators make up a splice (also known as a paster) on the incoming reel, which must be attached to the expiring reel that rotates at 2,000-2,500 FPM.

When a paster misfires, the coating operation must be shut down for at least an hour for cleaning and rethreading the coater. Also, during the first 20 minutes or so after the machine restarts, all production is lost to the broke hole due to poor profiles as the coater settles down.

Before starting the quality improvement program, paster efficiency averaged 96.5%, with at least 18 hours per month of downtime (based on an hour for each missed paster). The improvement team's mission was to continually improve to over 99% efficiency.

It reached its goal in two major phases. The first involved setting statistical parameters and stabilizing the coating process. For example, the team found that for a flying splice to be successful, diameter of incoming rolls had to be 63-101 in. Otherwise, speeds of incoming and expiring rolls couldn't be matched.

It also found that on one of every 500 splices, the cutoff knife was firing late, making an extra-long tail which often jammed the coater. The cause was traced to a software problem. After this and other initial problems were corrected, monthly coater downtime fell from 18 hours to 7.5, and efficiency climbed from 96.5% to 98.7%.

The second phase focused on gaining another efficiency percentage point. The team experimented with several variables, including: whether perforated pasters performed better than unperforated ones; optimum tape angle (high or gradual); tape width; effect of paper weight (60 lb. vs. 120 lb.) on paster efficiency; and how varying pressures on paster roll affect performance.

It found that perforated pasters worked well, that paster tape should be wide, tape angle should be low, that there was no correlation between paper weight and paster performance, a five point paster outperformed a nine point, and that pressure on the paster roll should be low.

After completion of the project, lost time on the coater averages 4.4 hours per month, with 99.24% efficiency. During one recent month, the coater crew made 652 pasters with 100% efficiency.

According to Bolen, overall benefits of the project include:

- process predictability of 99%+
- improvement in worker morale

- development of standard operating procedures
- improved utilization of vendors (requiring vendors to prove new machines and methods rather than simply accepting their word)
- improved cutoff knife design for less scratching at coater heads
- 40% reduction in tape consumption
- substantial savings in time to construct pasters
- 75% decrease in downtime due to lost pasters
- substantial decrease in broke (unsalable) paper losses due to poor profiles
- improved runnability of paper due to lower tensions.

Qualpro Provides 'Results Guarantee'

Qualpro, Inc. is a Knoxville, Tenn. based consulting firm specializing in quality improvement implementation. Its programs are based on continuous improvement and statistical techniques.

At the close of Qualpro's Fourth Annual Quality Leadership Symposium in Atlanta, Ga. on October 30, Chairman/CEO Dr. Charles Holland announced a money-back guarantee for the company's programs. The guarantee pledges, "that if upon completion of either Phase II or Phase III of the Qualpro Process the client company has not experienced a bottom-line impact greater than the fees paid to Qualpro, we will return the difference."

The company will offer prospective clients an alternative "Pay For Performance Contingency Arrangement," with service fees drawn from a percentage of actual gains and improvement. By offering the guarantee, the company hopes to distinguish itself from other process improvement firms in the field.

According to the company, its approach includes:

- a customized implementation strategy
- a non-technical, non-academic approach to practical statistics
- emphasis on data-based decision making
- quality improvement from the external customer's point of view
- easy-to-understand industry- and function-specific training materials
- focus on quick results, measurable returns on investment, and continuing success

• a staff of experienced, full-time, and extensively trained process improvement experts

- employee involvement through the productive use of teams
- focus on process improvement driven by line management
- employee and customer surveys.

Founded in 1982 by Holland, the company has provided consulting, training, implementation assistance and technical support to over 500 firms in the U.S., Canada, Australia, Europe, South America and the Pacific Rim.

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Boise Cascade's Richard Greer

ment superintendent Jim McKnight presented the results of a groundwood optimization project at its De Ridder, La. plant.

The mill produces 1,100 TPD of newsprint (made with groundwood) and 1,200 TPD of linerboard (made of chips). The company had traditionally used more valuable stems—larger than chip wood, and with fewer defects—for making newsprint, believing they were necessary for making quality groundwood pulp. To meet its groundwood quality specifications, the company found itself competing for the same trees used in higher value processes such as lumber.

Under Qualpro's guidance, the company established a 10 member Ground-