# Survey anticipates increase in capital costs

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*Forecast for 1993–94 identifies cost trends that will affect the pulp and paper industry.*

This is the fourth annnual Pulp and Paper Capital Cost Trends survey produced by BE&K. It covers the four quarters of 1992 and is tailored to accurately identify capital cost trends unique to the pulp and paper industry.

Although capital expenditures have been at a relatively low level, the economy and industry are perhaps at a turning point in respect to capital cost escalation. This year's study will focus on the transition from a period of low activity and escalation to one of increased activity in the industry and economy as a whole. This activity plus new legislative initiatives expected from Washington may well produce the upward cost pressure that drives inflation.

As forecast in the 1991 Capital Cost Trends Study (see *Tappi Journal*, November 1992, p. 63), escalation rates in 1992 remained low. However, the increases predicted in the 1991 study for 1993 and 1994 appear imminent. We believe the comparison to the Purchasing Manager's index (which was initiated last year) gives us a good indicator of things to come from a business activity standpoint. The upward trend in the Purchasing Manager's Index, coupled with issues such as deficit reduction and health care reform, will most likely increase the cost of doing business and point to increased cost for installed capital.

Investment tax incentives may offset a portion of increased costs, but January 1993 headlines provide a snapshot of the pressure on capital cost escalation.

- Lumber hits all time high
- Purchasing Manager's index at highest point in four years
- Across-the-board energy tax proposed
- Health care reform proposed
- Economic recovery to ease pulp and paper capital spending decline
- Has the economy finally recovered?

As we face the apparent upswing in escalation rates, we have to ask: How high will prices go and how will the price increase have an impact on bottom-line project costs? Although BE&K does not anticipate a return to the peak levels of 11% during 1988, we do expect the escalation rate to hit 6% during 1994, with a lower rate during this transition year of 1993.

Please note: The escalation rate defined by BE&K Capital Cost Trends study applies to pulp and paper capital cost only and does not apply to the economy as a whole. Over the past eight years, the general economy as measured by the Consumer Price Index increased at a relatively constant rate (straight line), as opposed to the pulp and paper capital cost trend where fluctuations were much more dramatic (peaks and valleys). Escalation rates during periods of high capital spending outpace the increase in the CPI; conversely, during low periods, the pulp and paper capital cost index tends to fall below the CPI.

## Basis of study

Material and equipment specifications from major pulp and paper projects, plus quantities from a specific project, have been used to define the scope of work and cost distribution. Pricing was obtained for each sample material and equipment item from suppliers serving the pulp and paper industry. Labor, indirect, and engineering costs were identified from actual rates experienced in the industry (Fig. 1).

### Project basis

The project cost model is based on a +300-in., lightweight-coated, world-class facility expansion completed in 1985. Contracting is based on open shop construction utilizing direct-hire labor. Labor rates were based on the southeastern United States.

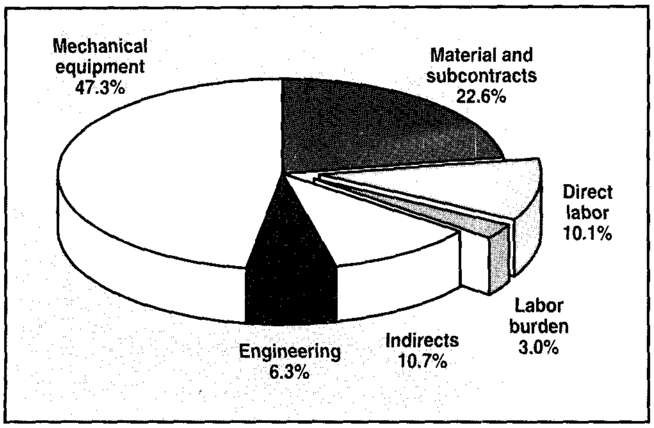
### Areas of study included:

- Woodyard
- TMP
- Stock preparation
- Paper machine
- Coating
- Finishing and shipping.

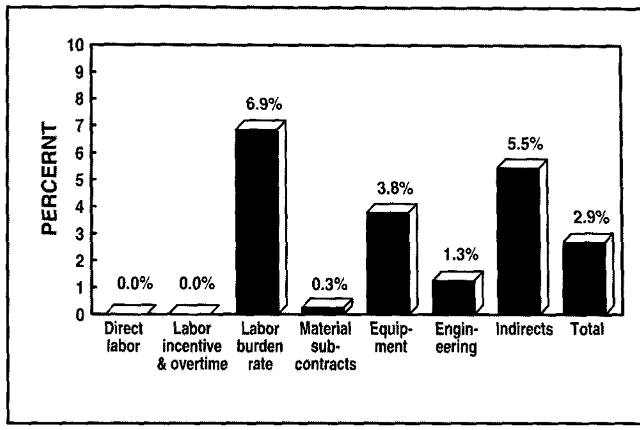
### Material selection and pricing

Representative Sample Items (RSI) were identified utilizing detailed material specifications, purchased quantities, and project

**1.** Total project cost distribution




**2.** Net change, 1991-92




cost reports. The RSI quantities and pricing covered approximately 80% of the project material cost.

## Equipment selection and pricing

Specifications for major equipment components were resubmitted to evaluate and requote for 1992. Representative samples from general equipment categories such as tanks, pumps, and motors were also repriced in 1992 inquiries. Suppliers were interviewed to survey their experiences and solicit information regarding future trends.

## Cost escalation: 1991-92

The escalation rate for overall project cost indicated a 2.9% increase over the four quarters covered by the study. This rate of escalation is slightly higher than the 2.2% forecast from last year's study and is due to continued increases in specialized pulp and paper equipment. Labor and material costs remained virtually flat, but labor burdens continued to rise at a significant rate (**Fig. 2**). Labor incentives and premium time, other than casual overtime, were virtually nonexistent during the period, reflecting an adequate supply of labor in a depressed market.

As we entered the second year of declining demand, suppliers still report activity at very low levels and expect the same for the first half of 1993.

## Construction labor

Construction labor activity and costs peaked in 1990 and 1991 as major capital expansions were completed. Since that time, the demand on labor has been at very low levels with stable wage rates. Open shop wages in the Southeast, the basis used in the study, did not rise measurably during 1992. Another cost factor monitored by the BE&K study is labor incentive and overtime (over and above casual overtime). As capital activity declines, the number of skilled construction workers available to perform future projects also declines. As capital work returns, overtime and incentives are important tools employed to attract the work force and increase the weekly amount of work produced by each worker. During late 1991 and 1992, project activity was low and, as a result, the need to employ these techniques was minimal. As forecast in the 1991 study, competition for resources is expected to pick up during 1993 and 1994 as new projects enter their construction phase.

## Materials

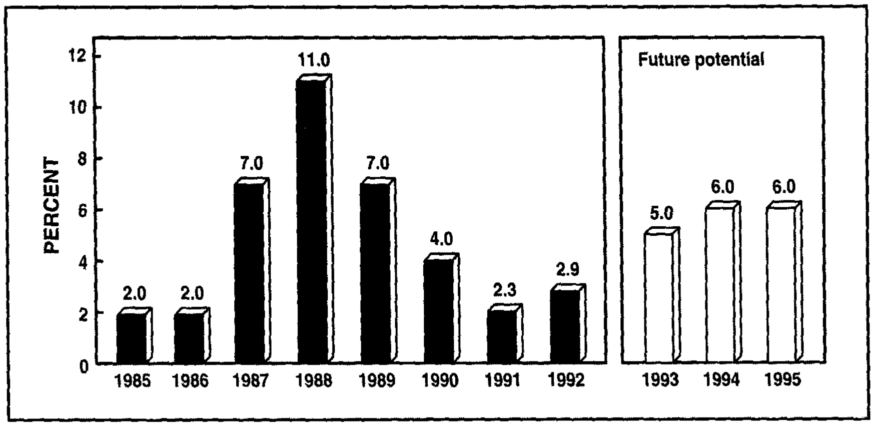
As reported by suppliers, material prices remain low and reflect the lack of activity during 1992, confirming the trend predicted in last year's study. Raw materials and labor generated small increases for 1992, and significant increases are not expected until capital spending accelerates. The exceptions will come in specific commodity materials where policy decisions from Washington may have an impact on foreign competition and fuel costs. As a side note, a significant number of suppliers we attempted to contact this year for material prices are no longer in business, which is an ominous result of low capital spending.

## Engineering

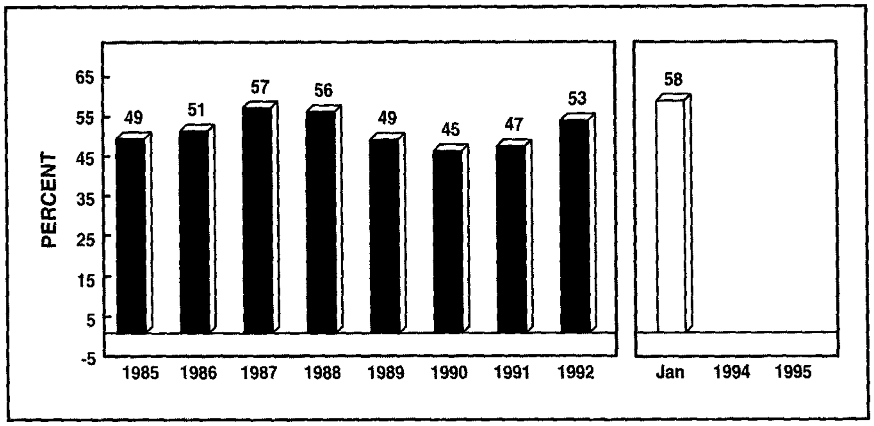
Engineering costs were also flat as many companies have reduced work force and maintained low profit margins due to the lower volume of workload. However, some firms are reporting higher costs per work hour as the ratio of highly skilled to lower skilled workers increases, a common survival technique during periods of low work. The continued increase in the use of 3-D CAD and sophisticated automation techniques continues to alter the engineering equation. Based on BE&K's experience, the automation portion of engineering is increasing, while the labor component is decreasing. The net effect is a stable engineering cost with reduced impacts from engineering wage increases.

Rework cost was not included as a separate factor in BE&K's original basis for the escalation study. However, an important side note to the automation issue is the emerging success of 3-D CAD. The number of projects where 3-D has been used continues to increase, and significant reductions in the amount of interferences and rework have been reported. It is our view that this method of design is rapidly moving from an alternative method of design to the preferred method.

3. BE&K Index showing percent escalation




4. Purchasing Manager's Index (*NAPM Insights*, January 1993)




## Comparison to other indexes

This year we have once again targeted the National Association of Purchasing Manager's Index. As you will note, when comparing BE&K's and the NAPM peaks and lows, the Purchasing Manager's Index (PMI) appears to lead the pulp and paper trend by approximately one year (**Figs. 3 and 4**). In January headlines, the PMI hit a four-year high of 58%. We feel this level in the index is an indicator of what we can expect in late 1993 and 1994. The 1987 and 1988 PMI values were 57% and 56%; corresponding with a one-year lead time, the BE&K escalation numbers for 1988 and 1989 of 11% and 7%, respectively.

The future potential portion of the BE&K graph indicates our evaluation of the escalation based on information compiled for this survey. We feel the escalation rates for 1993 and 1994 will be more moderate than the rates experienced in the late 1980s, but we do feel significant price increases are on the horizon.

The NAPM report on business is based on data compiled from monthly replies to questions asked of purchasing executives in over 300 industrial companies. Survey responses report the change in the current month compared to the previous month for each of eight business indicators measured. The PMI is a composite index based on the seasonally adjusted indexes for five of the indicators (New Orders, Productions, Supplier Deliveries, Inventories, and Employment) with varying weights applied.

The NAPM indexes have the properties of leading indicators and are convenient summary measures showing the prevailing direction of change. A Purchasing Manager's Index above 50% indicates that the manufacturing economy is expanding. The distance from 50% is indicative of the strength of decline or expansion.

## Mechanical equipment

Mechanical equipment continues to lead the upward escalation spiral in terms of bottom-line impact on project costs. Wage increases are driven based on annual labor agreements in union shops, in spite of the fact that demand for equipment is still at low levels. Major categories of equipment reflect price increases in the 3–5% range. This is the least volatile year we have witnessed in the past six years for process equipment pricing.

In the past, improvements in technology have had a major upward influence on project costs. During this period of slow expansion, however, we have not witnessed the emphasis on new technology noted during times of healthy capital budgets.

With the strength of the U.S. dollar, foreign manufacturers are beginning to see an improvement in the price competitiveness of their products. This trend will force domestic suppliers to minimize price increases in order to stay competitive. The dollar is, for example, gaining strength against the Swedish Krona after a seven-year slide. Although this strength is not reflected against all currencies, the impact will mean tougher times for domestic suppliers and manufacturers alike as the dollar rebounds against individual currencies.

## Future trends

The capital spending survey published in the January 1993 issue of *Pulp and Paper* (p. 75) stated that the downward trend in capital spending has leveled off and should turn positive as the recovery progresses. Other trends identified include continued increases in environmental spending and less emphasis on expansion plans. Projects directed at recovered paper recycling continue to lead the capital expansion spending. Also noted in the issue, "One effect of the recession has been to push back spending into future years. While only a few projects have been canceled outright, over twenty have been postponed."

As we look back at the mid- to late-1980s, it reminds us of how quickly the escalation tables turn inside a single industry such as pulp and paper. The trends identified in **Fig.** 5 point to significant increases in the escalation rate. Arrows pointing down indicate lower costs, horizontal arrows indicate stable costs (less than 3% increases), and up arrows indicate significant increases.

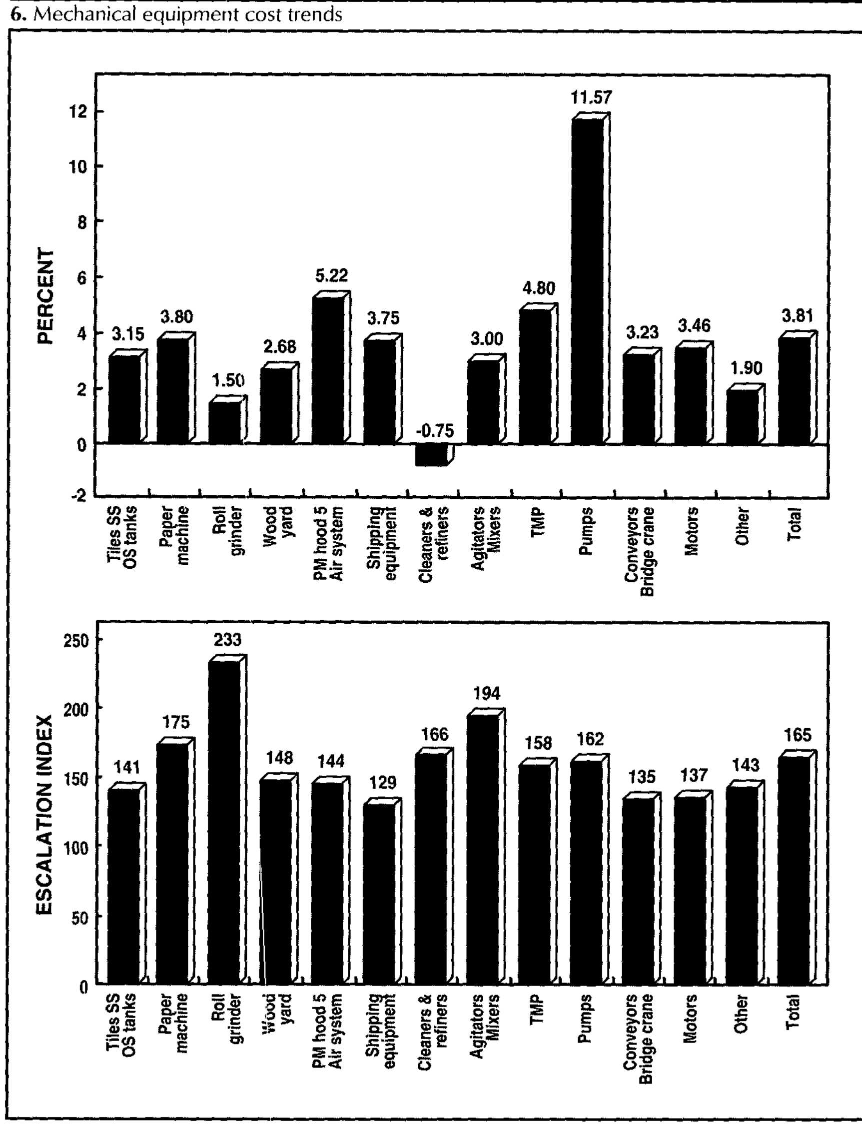
**5.** Anticipated cost trends

| COST INDICATORS | 1993 | 1994 |
|---|---|---|
| Direct labor | ↔ | ↑ |
| Labor incentives & overtime | ↔ | ↑ |
| Labor burdens | ↑ | ↑ |
| Materials & subcontracts | ↑ | ↑ |
| Equipment | ↑ | ↑ |
| Engineering | ↑ | ↑ |
| Indirects | ↑ | ↑ |

## Construction labor

As forecast last year, the construction labor market will remain flat through early 1993, with small increases expected later in the year. The first increases will appear as wage and benefit increases, with additional overtime incentive plans occurring as a second phase, possibly during 1994. After two consecutive years of low capital activity, the working construction labor force has declined, and a number of skilled workers have permanently left the construction work force. Once capital expansion requirements exceed the available labor pool, the competition for workers will be reflected in higher wage and incentive costs.

**6.** Mechanical equipment cost trends




## Material

Material prices, in general, should remain low through most of 1993, according to feedback from suppliers. Some notable exceptions include lumber—driven to record levels by hurricane damage in Florida and restricted logging in the Northwest—and structural steel. A lawsuit against foreign manufacturers for dumping steel in the United States should go to court this summer. Increases may result and could be expected during late 1993. In general, suppliers are still operating at very low profit levels and are still looking for the upswing that will allow prices and profits to be increased accordingly.

Materials are also one area where government policy will have an impact. One deficit reduction proposal includes a broad energy tax. This tax would directly affect manufacturing and transportation costs, with increases reflected in higher prices for goods and services.

## Engineering

Wage increases have been minimal in the past two years in many engineering companies. With the first signs of improvement, wage increases in the 3–6% range can be expected. Overhead and profit multipliers should still remain at relatively low levels through 1993 until the strength of the capital recovery improves. As we enter 1993, prospects look better for some engineering firms.

## Mechanical equipment

As noted in previous studies, mechanical equipment in the pulp and paper industry generally defies economic analysis, primarily because of the need to continually improve product quality, efficiency, and environmental impact through technology. In spite of declining demand, equipment continues to escalate as technological improvements are added (**Fig. 6**). Specialized pulp and paper equipment can be expected to rise first, and one major supplier has a 9% increase targeted for spring 1993.

To quote from the 1991 BE&K Capital Cost Trends study: "The technology premium, value of the dollar, customer preference, raw materials, labor, and—last but not least—demand, all combine to make mechanical process equipment the most volatile and interesting cost category. In summary, the first orders into the shops can expect very favorable pricing, after that, modest increases. Once the capital valve opens, equipment cost increases in excess of 10% per year can be expected once again."

## Summary

After two years of low escalation rates, a general reluctance to recognize escalation can be expected, and capital cost estimates will tend to underestimate the potential impact. We witnessed this on projects estimated during 1986 and 1987, and constructed during 1987, 1988, and 1989. This is one of the reasons the BE&K Capital Cost Trends study was initiated. With this year's study, we have the opportunity to better assess the potential impact of escalation and budget accordingly, thus eliminating one of the surprises encountered on past multi-year projects. The 1991 study indicated potential escalation for 1994 of 7%. We have now reduced that forecast to 6%, based on moderate capital spending increases anticipated. Our forecast for 1995 is also set at 6%, based on expectations of continued improvements in capital spending, although still moderate. Certainly, substantial changes in spending levels will have a corresponding impact on these forecasts.

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