

# A Continuing Evolution

A mill engineer today must wear many hats and be prepared to take on non-technical challenges.

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**Although their numbers may** be diminished, the role of an engineer in a pulp, paper or board mill is constant: to solve problems. How they solve these problems has changed. Simple numbers also play a big role. Doing more with less (staff, money) is a continuing struggle.

Technology has brought about a huge transformation. For the most part, it helps. But sometimes the massive amount of information now available at the touch of a button can be overwhelming. Jacques

"Engineers coming from this industry are seen as some of the best because of the complexity of a pulp and paper mill. The amount of machining tolerance that has to go into a headbox is mind boggling."  
– Jacques Perrault

Perrault, senior engineer, papermaking for Cascades, notes that some of the evolution of an engineer's role reflects the changing conditions in the industry.

What are the main issues facing the pulp and paper mill engineer today? Doug Sweet, Doug Sweet & Associates, said that generally, the mills don't have enough engineers. Taking it to the extreme, without the technical people who now work for suppliers or consultants, some mills would be in a real bind.

Dick Reese, Dick Reese and Associates, adds that the days of the corporate engineering department are mostly gone, a fact noted by others interviewed. "There are no engineering departments left; maybe one guy, even at the big producers. The industry used to have companies that had strong engineering departments, that knew how to design a paper machine and were aware of what would work and what wouldn't. Now, it's tough for people to know who to ask."

Reese adds, "There are too few and they are spread very thin. Most mills don't have much capacity to work with, so any problem must be significant before it is addressed."

As has been noted by many, a lot of onus has been put on the suppliers. Contracting out to the supplier or consultant is here to stay. With the increasing sophistication of the mill machinery, one could use an automotive analogy: that modern car engines are so sophisticated, the days of the do-it-yourself mechanic is over.

Sweet agrees, to a point. "Processes are more complex, so you do need to bring in specialists for some things. It's a must."

However, a lot of issues concern "low hanging fruit" or even "pumpkins" that are already on the ground; these are issues that should or could be fixed by the mill itself, if the mill has the resources to be aware of the problem. The people left have their hands full, and it's difficult keeping up with new products/services from suppliers, so possible solutions are ignored.

With fewer technical staff, it is harder to concentrate on the core business. What used to be regular routine studies are now being ignored or not done frequently enough; while the papermaking process can be forgiving, there are occasions when neglect can cause a huge negative effect. Work such as new product development or solving chronic issues takes longer and is more difficult. Some mills have problems that have existed for years,



Doug Sweet: "Look at all you are exposed to at an integrated mill: pulping, papermaking, energy, environment, logistics."

but could not be addressed because of a lack of staff, knowledge and/or money. As the old axiom goes: You don't know what you don't know.

Reese adds that the "wily old vets" are retiring and younger crews don't understand what's needed on a paper machine to get good performance. Resources in a mill are dwindling. The key is to have an experienced and knowledgeable progressive mill manager who knows how to make good things happen.

Sweet notes that even for those few producers that have kept their corporate engineering groups or those who use outside consultants, problems may arise or people feel their toes are being stepped on. Sweet cites one example of a producer's mill audits (power, paper machine) being a joint effort between corporate, mill, supplier and consultant. These can achieve good results; however, if the work is being done completely by outsiders, sometimes results are not well received inside a mill.

When available, corporate technical assistance tends to be more focused and results-driven. The aim is to increase efficiency and reduce downtime. Downsizing may also hamper equipment selection and lead to mistakes or relying too heavily on the suppliers.

Wyck Newberry, Tidewater Recruiting, echoed the issue of having to do more

with less. "Companies are running leaner. Engineers need to wear many different hats, from capex to reliability. And then they are worried about outsourcing and losing their jobs."

Perrault says there is another aspect to this workload increase: less time to travel to meetings such as PaperCon. Networking is important, but the opportunities to do so are becoming rarer. Thus, engineers must adopt new technology such as webinars and Skype. Still, he adds, there is nothing as good as face-to-face communication.

## OUTSIDE COMPETITION

In North America, the pulp and paper industry competes for manpower with other industrial sectors – areas seen as much more appealing. In an article in *PPI* (November 2014), Newberry wrote: "The paper industry loses a lot of engineers to other industries for their sex appeal. Does building robots at Honda or self-driving cars at Google sound more appealing than studying starch content in a paper mill? Sure it does, and this is part of the new competition."

Slowdowns in other industries, particularly oil and gas, have helped alleviate some of the problems; however, it can still be hard to get good engineering help. Too often, companies are looking for the cheap and quick fix.



The view of our industry as regressive is false, states Perrault. Part of this may have to do with the decline of the graphic paper market, but tissue and board are doing well. “Engineers coming from this industry are seen as some of the best because of the complexity of a pulp and paper mill,” he says. “The industry is very high-tech. The amount

of machining tolerance that has to go into a headbox is mind boggling.”

Although there have been cutbacks, there are still opportunities. The Baby Boomers are retiring and most mills will say an aging population is affecting their ability to fill jobs. So while there are not as many employment possibilities within a mill, they do exist.

Many are retiring because they are “tired” of the lack of resources. How will this play into finding new hires? Will resource scarcity cause early burnout?

Newberry says the education system is not producing engineers like it used to, so the engineers are not out there in their former numbers. Also, fewer have manufacturing



PaperCon includes a large exhibit floor.

## PaperCon Explores ‘Who is Going to Do?’

For the eighth straight year, representatives from TAPPI’s Paper and Board and Engineering divisions have worked together to develop tracks for the PaperCon technical program. One of the tracks at this year’s conference will discuss issues and find solutions associated with the changing roles of papermakers and engineers in the pulp and paper industry. The track is called “Who is going to do?” and it is based on a quote from former papermaking colleague Joe Pham, who once said to a group of suppliers and corporate support: “You make a list. You make a list. You make a list. Everybody makes a list. Who is going to do?”

The track will include a combination of panel discussions, roundtables, technical papers and success stories aimed at helping papermakers find state-of-the-art resources to be successful in today’s paper mill. Some of the scheduled topics include “Who is going to do the training?” “Who is going to do the rebuilds?” “Who is going to manage our projects?” “Who is going to come up with better mousetraps?” and “What do I do with all this data?” As has become a tradition, the track will kick off with a roundtable discussion identifying issues and potential solutions and wrap up with a conference summary roundtable where participants will share “What am I going to do differently when I get back home?”

PaperCon 2016 will be held May 15-18 in Cincinnati, Ohio. Complete program information and online registration at [papercon.org](http://papercon.org).

— By Jeff Reese, Track Leader

backgrounds. Reese adds that there is tremendous demand for graduates from the paper schools.

Recent grads do have great opportunities. Internships or co-op programs give graduating engineers a big leg up on others when looking for a job. Reese adds that engineers need a good understanding of the various processes in a modern pulp and paper mill. Those who did internships have a good understanding; those without internship experience don't, and face a hard process. Therefore, companies and mills need to hire and train properly. And training should be done with the aid of modern technology, such as iPhones or tablets, which young engineers understand and use daily. Newberry says producers also need to develop more internship programs.

Perrault says he looks at many qualities a young engineer should have before entering the industry: a strong technical background, strong motivation, the ability to work autonomously and/or as part of a team, a positive attitude and respect. There are also two qualities becoming more important: effective communication skills and consideration for issues surrounding health and safety and the environment.

Although engineers in the past were often placed in "silos" – highly specific, strictly technically-oriented areas – many producers have developed policies that see recently hired engineers rotate through various departments in a mill so they can receive experience in most mill tasks to find the best fit (if there is a fit at all) for their talents. This was mentioned by most of the interviewees as a very valuable tool.

Perrault adds that supervisory jobs have become more technical, giving engineers a more active role in department management. The times when a technical superintendent may have come up through the ranks have all but disappeared. More and more, he says, the important jobs go to engineers.

The skill sets that pulp and paper engineers need will evolve continually in the future. Technology is still important, as

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Perrault points out, but the new generation engineer must also understand human behavior, including the complexity of shift work and its effects. The issues are not always technical. As well as the engineering problems that arise, they must be able to solve other problems, such as financial and human resource related.

### **LEARN TO COMMUNICATE**

One skill set often lacking is communication, Sweet adds. Engineers still have a tough time giving or receiving information. This is not a skill set that comes with an engineering degree; it must be acquired.

Paul Stuart, Université de Montreal, says, "We need leaders. This is the challenge the industry faces. Now is the time to get into the industry; the table is set with the emerging bioeconomy."

"We need to attract the best and the brightest. We still need research people in the mills. If we bring in new technology and innovation, we need people who are not afraid of technology and can assimilate it. This needs to be recognized."

Sweet does not see producers replacing engineers; technical expertise will always be needed to solve problems. For example, paper machine superintendents tend to be a lot younger now, with a degree in pulp and paper from an engineering facility.

Training has improved, which does help. Fewer people can do more, but sophisticated machinery needs attention. Technology continues to evolve. All equipment is electronically controlled by computers and this will continue, so engineers, no matter their specialty, will have to keep up with technology.

One western Canadian mill manager told *Paper360°* that the amount of information available is staggering and – with various mobile communication devices – not only is it online, it's available 24/7, accessible from virtually anywhere. It has made the job easier, but in some ways more complicated. The market is more demanding; an engineer must be able to relate the information available to the product, to improve it and do so rapidly.


### **IS A MILL STILL A GOOD PLACE TO WORK?**

"I love what I do," says Sweet. "I have fun finding solutions to problems. It is still an enjoyable industry where it is safe to try things; mills are open to change and improvement."

There is so much to see and do; an engineer is exposed to numerous issues and challenges. Sweet says, "Look at all you are exposed to at an integrated mill: pulping, papermaking, energy, environment, logistics."

Newberry says people who enter the pulp and paper industry and stay a little while and then leave always seem to want to come back. "There is an intangible feeling about the industry and people's desire to stay in it."

While for some the mostly rural lifestyle due to the location of most mills can be a negative (compared with the glamour of Silicon Valley); for others it is a positive. Plus, paper is here to stay, and compensation is generally excellent. The remaining mills will be more complex with higher tonnage. A mill is still demanding of skills; it is not "seat of the pants" flying.

Perrault says the industry has a "real human fiber" to it. "People are good and respectful. It may be more demanding than it was, but the same could be said of many industries." 

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