



By TERRY WHALEN

Managing outside resources properly will provide more than just monetary benefits

BACK TO BASICS

For decades the pulp and paper industry has contracted outside resources to design, build, and maintain manufacturing facilities. When it comes to maintenance and reliability of manufacturing assets, it is almost inconceivable that the industry could continue its business without access to these important resources. In short, contracted services are critical to short and long term infrastructure integrity and profitability. That being said, we must ask ourselves: How well do pulp and paper mills manage these important relationships and capture their essential contributions for strategic gain? Are the contracted resources true partnerships? Are they strong, reliable, and cost effective?

Consulting in the North American pulp and paper industry since early 1975, I have seen many approaches to managing outside resources, working with single-mill companies as well as those who count their mills in the dozens. Across the industry,

managing contractors has always come down to four objectives: maintenance of infrastructure, improved manufacturing productivity and quality, and increased profitability. How mills attempt to realize those strategic goals varies widely across the industry. The simple fact is outside contractors are only as effective as a mill's purpose for hiring them and its strategy for managing the projected work.

AVOID COMPLACENCY

A mill manager in the southeastern US shared the following thoughts on contractor management. When the mill makes a request for bids, the low bidder typically gets the work. The majority of the bids are "lump sum" because they are the "easiest to manage." The contractor selected is often a known quantity—"somebody we have contracted with for years" and "who is familiar with the mill". The mill rarely reviews costs or performance against plan after

Work Order	B070049	Date	
Job Description	Replace #1 Kamyr Floor Valve or Valves - (V64A, 64B, 65A or 65B) - Valve(s) TBD		
Area	Digester - 221		
Asset	Vessel - 012010		
Planner	G Lopez		
Misc	Staging Required		

Location
At low pressure feeder floor outside of control room on the southeast side.

Job Steps	Crew	Job Hours	Man Hours
Verify Lockout - complex (listed as #1 Kamyr R&M).	PF	0.10	0.20
SAFETY: Hang personal lock(s)	PF	0.10	0.20
10" 300# GLOBE VALVE REMOVAL			
Prep Job site with rigging tools - (2) 20Ft Wire Cable Slings (Minimum 1/2" DIA), (2) 1 Ton Chain Falls with 20Ft chain and 1 Cable Come-along. See attached image for rigging points.	PF	0.80	1.60
PREP WORK: Carpenters to erect staging below the floor for access to the valve(s) - this needs to be scheduled at least one day prior to start of valve removal.	CA	4.00	8.00
SAFETY: Proper PPE for Black Liquor break-in must be worn when breaking flanges for valve removal. Remember to always treat flanges as being under pressure when loosening bolts.			
SAFETY: Reference the Line Breaking Documentation for details regarding line breaking procedure(s).			
Remove the Handwheel(s) from the valve(s), rig and remove the 50" X 50" floor plate and set aside away from work area. See attached image for details.	PF	0.50	1.00
SAFETY: Use Yellow Caution Tape and barricade the area.	PF	0.10	0.10
Rig Valves for removal - make sure to properly distribute the load.	PF	0.10	0.20
With one pipefitter on the staging below the floor and other pipefitter above, safely unbolt the valve flanges and lift valve. SAFETY: The pipefitter above the valve must be in control of the 1 Ton Chain Fall and all must pay attention to load shifting.	PF	3.00	6.00
SAFETY: when working from staging use good body mechanics when bending, reaching etc.,			
When valve is lifted, place the valve on 4 wheel carry cart and transport to the North side of #1 Kamyr low pressure feeder for yard crew to lower to ground level.	PF	0.50	1.00
Contact Yard Crew and notify them to mobilize the Mini-Grove (with Jib attached) to lower old valve and to lift new valve. Place new valve on 4 wheel carry cart and transport to work area.	PF/YC	0.80	2.40
Total Hours:		6.00	12.70

Fig. 1 - Kamyr job plan

the work is completed, being satisfied simply that the work is done. This approach to managing outside resources has led to a certain complacency and absence of effective oversight of the contractor's activities. Contractors receive little follow up, are viewed as a simpler way to get work done, and are almost never interviewed to review performance or learn evolving best practices.

To modernize their aged practices and expand limiting views of outside resources, pulp and paper mills require strategic management plans that include long-term outage objectives, financial management guidelines, and contractor relationship development. This article is a blueprint to develop and implement such a plan, but first, here is an example illustrating the effect of unmanaged contractor resources.

In 2005 during a maintenance improvement project at a west coast mill, we were asked to reduce the cost of maintenance and increase the reliability of the mill assets. To begin, a planning strategy was created; improved scheduling processes implemented; foremen were coached on the job; and improved inter- and intradepartmental cooperation established (Pulp & Paper, Nov. 2007; Maintenance renaissance: Bringing reliability to production). The project proceeded as planned and projected results began to materialize with one exception, costs were not falling as quickly as predicted. Further investigation uncovered a surge in expenditures on outside maintenance resources. The number was large, and growing out of control. The cause? Improved processes, particularly planning and scheduling, allowed for more work to be completed, which led to the hiring of more contractors to fill the increased capacity to do maintenance. A strategic planning initiative was implemented, including financial checks and balances, to manage the situation and significantly reduced the contractor expenditures by creating efficiencies.

The first step we took was to stop the "free" spending. The second step was to determine how to regain control of the outside resources employed by the mill. Both steps were taken with a sense of urgency and determination. Costs were quickly brought under control and significantly reduced. Our approach to assisting clients with performance issues changed; the impact of contractor management strategies became a more important element in our improvement process design strategy. This was especially true with regard to the annual outages that

#1 Kiln

1. Install new roller unit
 - a) Remove existing thrust roller unit.
 - b) Install new roller unit.

This task will consist of 4 men for 4 – 12 hour shifts.

192 Man Hours
NTE \$20,000.00

2. Install new gear cover and labyrinth seals.
 - a) Remove existing gear cover.
 - b) Remove existing uphill and downhill seal plates.
 - c) Grind shell as required.
 - d) Layout and install seal plates.
 - e) Install gear cover.
 - f) Minor modifications to cover supports are included, if necessary.

This task will consist of 3 men for 6 – 12 hour shifts.

216 Man Hours
NTE \$25,000.00

3. Install new feed end seal, plates and riding band.
 - a) Gouge loose existing riding band.
 - b) Grind shell.
 - c) Install new riding band.
 - d) Install new seal plates.

This task will consist of 3 men for 3 – 12 hour shifts.

108 Man Hours
NTE \$25,000.00

4. Install new oil wiper @ gear cover.

This task will consist of 2 men for 12 hours.

24 Man Hours
NTE \$25,000.00

5. Remove end caps from all trunion rollers.
 - a) Check bearings.
 - b) Check thrust buttons.
 - c) Clean and check oiling system.

This task will consist of 4 men for 5 – 12 hour shifts.

240 Man Hours
NTE \$25,000.00

almost every one of our clients performed in their manufacturing facilities. The benefits we sought to provide were:

- Reduced/eliminated causes of equipment failures
- Reduced maintenance costs
- Reduced product loss or production downtime due to equipment failure, repair or deterioration
- Ensure equipment operates to design specifications
- Maximize the life of equipment
- Improve equipment reliability.

In many mills the same approach to contractor management and spending numbers can be found. However, unmanaged contractor activities impact reliability and expense. When the numbers in the example where examined, corporate leadership and mill personnel were embarrassed and angry. They questioned how it could be? Why didn't we see this? And how did it could get so out of control?

KNOW THE RESULTS YOU WANT

The biggest factor affecting the success of an outside contractor is the planning and preparation made by the mill prior to engaging the resource. The mill must be able to describe the results it is seeking from the contractor. The description must be as precise as possible, the more precise the greater opportunity for success. In those unusual situations where the mill does not possess the skills to develop the scope and content of the work, help can often be found elsewhere in the corporation or from trusted resources outside the company.

Failure to thoroughly understand what you are requesting of the contractor makes it impossible to negotiate a fair and reasonable cost for the work and develop the performance parameters that will be used to measure contractor performance.

A detailed work identification and planning process also allows mills to move from "lump sum" and "not to exceed" contracts to more precise and manageable time and material contracts. It strengthens the negotiating position of your purchasing personnel and allows for the contractor to bill only for the work and materials you are requesting them to provide. For example, a contractor may insist that a particular job

would require 200 man hours and that is what they are going to invoice you for. However, if the purchasing person has a detailed step plan developed by one of your maintenance planners or engineers stating the work should require only 120 man hours, a discussion must ensue. The discussion is not about who is right or wrong. Rather it promotes opportunities for learning, enables mill personnel and contractors to focus on results rather than activities, allows for a clearer understanding of the work to be performed by the contractor, and strengthens the mill-contractor partnership. To illustrate what we mean by step plan, see Fig. 1.

Another real example for your consideration: Major mechanical work was required on two lime kilns during an eight-day annual outage at a South Carolina mill. The contractor bid the job with a lump sum proposal of \$1 million and was awarded the contract. Upon review of the bid with maintenance and purchasing personnel, it was concluded that the work would be more efficiently done on a time and materials contract. The final cost of the work was roughly half of the initial bid, a cost reduction of approximately \$500,000. The effort required to secure this reduction was surprisingly little. It did however require the mill to modify its approach to this long time contractor and ask different questions than they had asked in the past. The highlighted copy on page 2 illustrates a wide variance in the man hours required to perform the five jobs listed, but only a small variance in the fees being charged. In fact, four of the jobs have identical quotes.

In another situation at an Arkansas mill, a package of larger jobs was placed for bids, the winning bid was a \$906,000 lump sum proposal. The planner who was to oversee the work felt uncomfortable with some of the details of the proposal. In partnership primarily with maintenance foremen and craftsmen, it was determined that there was far too many man hours in the proposal for the scope of work. A new time and material contract was developed and the reduction in this example was approximately \$400,000.

The opportunities are not always hidden in the \$1,000,000 proposals; they appear in every size of contractor proposal presented. With an outage approaching an Arkansas mill was planning some metal work around one of the paper machine. It wanted to replace three 25-ft steel beams, and because of the corrosive environment the beams were to be placed

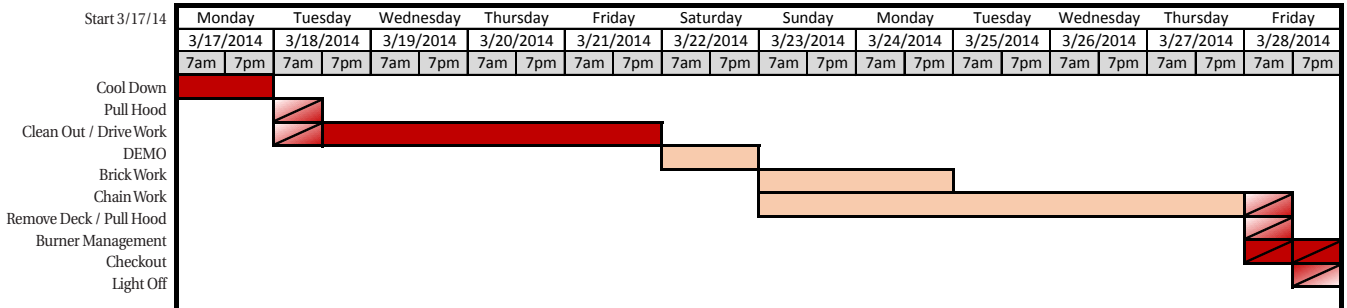


Fig. 2 – Emlex schedule

Direct Labor: \$ 47,281.00		13.5 ft. Diameter Kiln Brick Repair	Linear Ft	# of Sections											
Per Diem and Travel: \$ 12,834.00			30	1											
Material: \$ 96,323.00															
Total Cost: \$ 156,438.00															
Total 12 hr Shifts: \$ -															
Labor Rates		Hours	Super	WF	Mech	SD	TK	Watch	MH	Total	Total Hour/Craft				
Step Plan	Shift	GF	BL	Mech B	LBR	CW	HW/BW/FW	Total	BL total MH	Mech B	LBR	CW	Watch		
Set up platform (include scaffold stairs)									-	-	-	-	-		
Install lights									-	-	-	-	-		
Inspection scope verification									-	-	-	-	-		
Set brock machine and saw (electrician)									-	-	-	-	-		
Tear out brick									-	-	-	-	-		
Remove brock machine									-	-	-	-	-		
Clean out brick									-	-	-	-	-		
Sand blast set up									-	-	-	-	-		
Sand blast shell									-	-	-	-	-		
Clean out debris									-	-	-	-	-		
Inspection plant									-	-	-	-	-		
Layout square lines (masonite board)									-	-	-	-	-		
Set up brick rollers									-	-	-	-	-		
Stock brick									-	-	-	-	-		
Start laying brick (bed out) no more rolling of kiln									-	-	-	-	-		
Set up bricking rig and platform									-	-	-	-	-		
Start laying brick overhead									-	-	-	-	-		
Clean out kiln									-	-	-	-	-		
Mop kiln									-	-	-	-	-		
Remove platforms and pipe									-	-	-	-	-		
Heat up									-	-	-	-	-		
Clean up									-	-	-	-	-		
Total Duration									Total Hrs	-	-	-	-		
Average Manpower/Craft									Total Cost	\$ -	\$ -	\$ -	\$ -		
									Total Sum	-	-	-	-		

Material List	Quantity	Unit	cost/unit	overage	# Pallets	Total
Kruzite 70 108-126 RKB		ea			-	\$ -
Refratherm 150		ea			-	\$ -
Sairset Mortar		Lbs			-	\$ -
		ea			-	\$ -
		ea			-	\$ -
Total						\$ -

Fig. 3 – Kiln work step job plan

in, mill personnel determined they should be coated for protection. The mill has a national account with the contractor, who theoretically is providing the best value, the bid for the job was \$10,000. The mill purchased the steel and coating materials and had it delivered to a location less than a mile from the front gate of the mill where the work would be completed.

It seems like a fairly simple job, until you look a little closer at the numbers. This contractor's stated rate for a "painter" who can also do surface prep if necessary is \$19.95/hour. Deducting 30% for equipment rental, the contract contained \$7,000 for the actual labor. That equates to roughly 30 12-hour shifts to prep and coat three 25-ft beams, or 120 man hours for each beam. Because it lacked a robust contract review process, the mill grossly overpaid to have three beams coated.

Although most mills possess similar policies and procedures, very few apply them uniformly across manufacturing systems. As a result they lose opportunities to reduce contractor costs. Everyone knows it; few talk about it. Everyone can recall instances of receiving contractor invoices, scratching their heads and wondering: "Why did that cost so much?"

Contractors are, in general, businessmen and women who want to provide good services at a reasonable price; they want to deliver good value, and develop productive relationships with their mill customers. They cannot do that in a vacuum. Mill leadership must participate in robust interactions with contractors that promote diligent and precise examinations of every significant job that mills expect contractors to tackle. Without the mill's active participation, we will continue to scratch our heads and wonder why contractor job costs are so high. This is true in day to day work with contracted resources and especially critical in major outage and capital project efforts.

Developing an effective planning process will transform how a mill approaches its engagement and

management of outside resources. A transformation from outdated approaches will save mills money, improve infrastructure maintenance, and improve productivity and reliability.

This blueprint is more than "doable." It is not a matter of awaiting new technology or changed labor union rules; it is a matter of the will of management to apply the process and expect improved results.

It is time for the pulp and paper industry to strategically develop transformational processes and cultures that better utilize and manage outside resources with an eye toward improved maintenance reliability and planning, and a more productive and profitable future.

PLAN VS PLAN

The planning process is a fundamental ingredient in the successful contract management formula. However, as we all have observed, there are numerous opinions about what a "good" plan actually contains. Two examples illustrate the point. The first is taken from a recent North Carolina mill annual outage. The contractor submitted a "plan" for the \$500,000 plus kiln work with the document, Fig. 2. You can draw your own conclusions as to the acceptability of the submitted plan.

The second example represents what I believe to be a more precise instrument that breaks down the work into more manageable and measurable activities. It identifies who is doing what, when, and for how much money. Safety is better served, productivity is easier to promote and measure, and the quality of work is simpler to assess, Fig. 3

Terry Whalen is the founder and president of Team Development Group (TDG, Florida, twhalen@team-developmentmn.com, 561-310-6511) PPI



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