

## **Sweat Equity**

### ***The Art to Implementing an Automated Lubrication Program - A Tanker's Guide to Survival in an Industrial World***

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A few years ago while working for a large paper company, I was asked to optimize our lubrication program. Our facility was experiencing major lubrication failures and it seemed no one had or wanted ownership of this beast. The goal given to me was to implement an automated lubrication program, and failure was not an option. I was coming to a paper mill straight from the U.S. Army with the desire to succeed in my new career. Like most new engineers, I set out to change the world by moving our current lubrication program from the Stone Age to the space age.

In the Army, we had a saying, "would you trust your life on the status of your equipment at this moment?" What this meant was, had the soldier taken care of all of the preventive maintenance checks for his vehicle, weapon, and ancillary equipment as well as follow up maintenance to know the exact status of his equipment? Every Monday was our command maintenance day. It was on one of these Monday's that I learned an important lesson early in my military career. Every soldier regardless of their individual job was in the motor pool performing command maintenance (PM's) on their vehicles for that day, including the officers. I witnessed first hand people "pencil whipping" the PM sheet so that they could get out of the motor pool and onto other things. The "pencil whipping" came to an abrupt end one Monday when my Commander at the end of the day issued an order for all vehicles to roll out of the motor pool and complete a twenty kilometer road march. He had in his hands all of the PM sheets completed for every vehicle that day. When vehicles could not make it out of the gate and there was nothing annotated on the PM sheet addressing any maintenance issues, you can only imagine the complexity of the one sided conversation that followed. Preventive maintenance can be the difference between life and death on the battle field.

In making the transition from the military to private industry, I first started out by evaluating the work practices of the oilers that I would be leading (not just supervising) on our new endeavor. I was appalled by what I found. There is truth to the statement "proficiency of bad practices". For example, the oilers would use open metal containers to dispense oil into before they would go out and service a piece of rotating equipment. If the residual oil in the can was of a lighter viscosity and they needed a different grade, they would simply fill up with a different viscosity oil. Never once did they flush the container or see if it was dirty to begin with. While I was shocked, I decided to look for some documentation on the lubricants used in our facility. What I found was a beat up three-ring binder with a lube survey that had been conducted 17 years earlier. Since that time there had been new installation of equipment and equipment taken out of service. There was no idea of what was taking place on a daily basis for lubrication.

The next phase of our journey was to get into contact with our lubricant supplier and regional lubricant engineer. I put our lubrication supplier on notice with our purchasing department and let them know that if their performance and customer support did not improve that we would start the process of changing suppliers. We were spending well into the 6 figures on an annual basis for lubricants, and we could get no more support than the delivery truck making a bulk delivery, and the oil company taking a couple of guys to lunch and giving them hats and pens. In the meantime, our equipment was failing due to lack of lubrication.

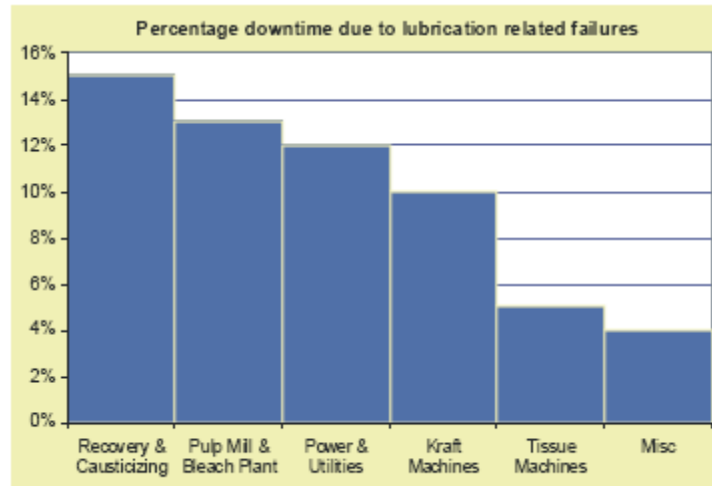


Figure 1 - Downtime Due to Lubrication Failures

So the question remains, how does one eat the proverbial elephant? Yes, I know, one bite at a time, but where do you start? We started by analyzing our downtime due to lubrication failures using a Pareto chart (fig 1) and began with our worst area first. I wanted our lubrication company to conduct a lube survey under my direction. The first thing that they wanted to do was to bring in a busload of lube engineers and blitz the mill. Understanding that this was going to be a long journey, I pulled the plug on that idea. I decided that we would platoon our efforts and only focus on one area at a time. I had one lube engineer that handled grease and one that handled oils. We set out and identified all of the equipment in the specified area that used oil or grease. We identified the following:

- Equipment Name
- Equipment Number
- Type of Lubricant (OEM recommendation)
- Correct amount
- Frequency for re-lubrication
- Oil Analysis candidate

What we found was the information in our CMMS was incomplete. By verifying the data in the field we were able to do two things, one was to identify and correct deficiencies within our CMMS and also to identify critical equipment that was missing from our vibration database. I could not believe that we had critical equipment that was not being monitored. It cannot be said enough, you must take the time to verify that your equipment information is correct. If you do not, then you will be setting yourself up for failure before you even start.

The next step was establishing priorities of work. What does the daily tour of work consist of? One of the big differences between military service and industry is the mentality that something is owed to the worker for doing his job right. As I stated earlier, before you even think about eating, personal hygiene, or even sleeping, your equipment comes first. It doesn't matter where the hands on the clock fall. So, if we go with my earlier question, "would you trust your life with the state of your equipment?" then it should be safe to ask as well "would you trust your paycheck to the state of your equipment that YOU are responsible for maintaining?" Unfortunately for my oilers at the time the answer would have to be a resounding "NO!" Prior to implementing any changes, we were getting roughly 20-30% productivity from each employee. Responsibility and accountability were missing, and it showed in missed goals, low production numbers, and high maintenance costs. Our daily tour of work had to change drastically. After changing our priorities of work, and running the oiler's through a hands on training program, our initial productivity

increased by 50%. I will show you later how we were able to accomplish this. What was surprising is that all of our lubrication related failures started to reduce dramatically.

We rolled out our first pilot project with a lubrication technician running a route with a PDA. I instructed the tech to run his old route just as before we changed. The results were staggering. What we found was that when the new lubrication tech ran his old oiler route that he was looking at roughly 23% of the equipment in any given area. Now that we had built a complete lube route and it was in the PDA, the inspection had to be triggered by the piece of equipment in the field. The equipment was now getting inspected properly and correct work was starting to take place. Another point of contention with management was that when we started these new routes, our maintenance costs began to increase because of the years of neglect that had taken its toll on the equipment. As we continued to roll this effort out across the plant, we found the same to be true in almost all of the areas.

It took roughly one year to implement this program across the facility. The main reason for the lengthy process was that I wanted all of the equipment identified and one functional area to be completely up and running before we moved on to the next. We followed the information on our Pareto chart and continued the implementation. By the time we finished, our lubrication technicians had moved from doing lube routes, to conducting an "equipment essential care program" which consisted of visual inspection of the equipment, lubrication checks, and temperature readings. In the eighteen months that followed after our implementation, our maintenance costs were steadily on the decline, and machine uptime and plant availability had increased.

### **Summary**

After implementing this program we increased our oil analysis sampling by over 400%. Our route compliance moved from 23% to an average of 92%. Our machinery failure was reduced by over 70% over an eighteen month period. These numbers are indicative of the new program, but remember that when implementing an automated lubrication program, it is more than to plug in play with new software and tools. You must do the grunt work in the field to ensure you have collected all of the right information to build your program on a solid foundation. You must develop a thorough training program to ensure that your technicians understand what is expected of them. Finally, you must inspect what you expect. You can teach an old dog new tricks, you just have to motivate them.