Lubrication Program Development:

Overcoming Common Hurdles
INTRODUCTION

Scott Selting: Reliability Supervisor
- 33 years in the Pulp and Paper industry
- MLAIII and RMIC certification
- Journeyman Millwright
- Journeyman Electrician

Pat Winnie: Lube Technician
- 17 years in the Pulp and Paper Industry
- MLT1
- Journeyman Millwright
Congratulations to the Domtar Paper - Rothschild, WI plant for winning the Reliability of Everything™ "Best Culture Start-Up Award." The award will be presented on March 8, 2023 during the 27th annual Maintenance and Reliability Conference (MARCON) at the Knoxville Convention Center. Your accomplishment will also be announced in a first quarter 2023 issue of Efficient Plant magazine.

Each year we only select up to three award recipients that can be in any of the three categories. The possible categories are Best Culture Start-Up, Best Sustaining Culture and Best Culture Innovation.

Your efforts in being resilient towards improving culture and achieving positive asset reliability results at the Rothschild Plant are being recognized (especially the Reliability Department's lubrication improvements). As you know, instilling the correct reliability and maintainability processes will support further operational excellence (safety, uptime/throughput, quality and cost). However, having the right culture will get you there faster and will help sustain standardized best practices.

Thank you for participating in this award process. We are looking forward to your participation in March and hearing more about your achievements.

Sincerely yours,

Dr. Klaus M. Blache
Efficient Plant

Gary L. Parr
Efficient Plant
DOMTAR - ROTHSCHILD, WI

- Integrated Mill with Pulp, Paper, Converting, Utilities, and Environmental facilities on-site
- Premium Uncoated Sheet
- ~375 Hourly and Salary employees
- USW Local 319

Proudly making Paper since 1910
COMMON HURDLES DEVELOPING RELIABILITY

Or as Larry Bryant said, “We are all fighting the same battles!”

- Drive and desire to improve
- Gathering facts and data. Many white papers demonstrating savings potential for lubrication improvements.
- AMRRI – “Last Frontier for Profit improvement”
- Tracking success and savings
- Corporate Support – Thanks to Bill Edwards, Charlie Floyd, Kathy Collins and Larry Bryant – they have approved our “One Domtar Lubrication Leadership” series of training. Much of what we have accomplished would not be possible without this team.

- Local Support
  - Management Support
  - Maintenance Team Support
  - Production Team Support
  - Union Support
PAT’S PERSPECTIVE:

– When he was a millwright, spent time firefighting. Did not fully understand value of reliability. Teaching other trades is one of the hurdles we need to recognize.

  – Goal to make the mill successful into the future
  – Doing my part to make our mill competitive
  – Enjoys the reliability wins/accomplishments
OUR TRANSITION – DESIRE TO IMPROVE

Looking Back:
- Traditional Oiler responsibilities:
  - Grease bearings
  - Check oil levels
  - Most of the day was time based or reactive work

Evolution of Change:
- In 2010, the mill transitioned from Oiler to Millwright/Oilers.
  - Increased Oiler knowledge
  - Increased flexibility between the 2 trades
- In 2020, the MW/Oilers began reporting to the Central Reliability Department.
  - Pro-active work/mindset
  - Reliability training
  - More Preventive Maintenance and less firefighting
- November 2021, restructured MW/Oiler job
  - Required ICML MLT1 and MLA1 training/ certification with the MW certification.
  - Anybody can buy our equipment. Using it to reduce costs requires a sustainable reliability culture. So, we need to have predictive and proactive beliefs as a foundation. This training provides that foundation.
WHERE ARE WE TODAY

Integration of Oil Analysis with Vibration Analysis

- Current Reliability Team:
  - 3 Vibration Techs
  - 4 Lube Techs
  - Filter/Corrosion Prevention Tech

- The Team reviews data from vibration, oil analysis, ultrasound, and basic care rounds.

- The Team initiates work orders, resolves ongoing issues, and determines root cause on our problem equipment.

- Success builds creditability and maintains Management support!
P TO F

Original Design (D)
Installation of the Asset (I)
Point at which a failure can begin to be detected (P)
Functional Failure: The asset is no longer able to perform its function in the way it is expected to (F)

I-P Interval
P-F Interval

Asset Condition

Precision Maintenance

CBM/Predictive Maintenance

Preventive Maintenance

Corrective Maintenance

Run-To-Failure

Catastrophic Failure

Source: https://production-technology.org/the-impact-of-equipment-reliability-on-human-safety/
Adapted from: Dustin M. Etchison, CMRP, MSc – Reliability Engineering at University of Tennessee, Knoxville

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OIL SAMPLING

- Proactive Sampling
  - Our Team greatly expanded the use of oil analysis
  - Sampling program to monitor our bulk and in service lubes and compare them to Domtar ISO targets
  - Oil analysis is credited for preventing many pump failures.
OIL CLEANLINESS IMPROVEMENTS

- Completed construction of a lubrication clean room
- Installed filtering equipment for new oils in clean room
- Portable filtering equipment for hydraulic reservoirs and gear boxes in service
- Isolation equipment such as quality breathers, quick disconnects for oil refilling/filtering, and sample ports to prevent contaminate ingress
- Lubrication color coding system to prevent cross contamination
- Review all lubricants used in mill and consolidate when possible.
OIL CLEANLINESS IMPROVEMENTS

- Improve storage area to best practice, inventory management, supply chain issues
- Installed sampled ports and sight glasses for level and condition monitoring
- Main lube on-line oil condition monitoring system
  - Includes moisture monitor
  - Main Lube – ISO particle count Trending - Parcview
**OIL CLEANLINESS IMPROVEMENTS (CONT.)**

- **Paper Machine Main Lube success**
  - Previously 5-10 bearings per year
  - Currently less than 1 per year

- **High Density Pump RCA:**
  - >3X life expectancy increase
  - Reduced operations downtime
  - Reduced maintenance costs
  - Often unplanned failures

- **R5 gearbox oil Cleanliness**
CORPORATE SUPPORT

Domtar Corporate support: Larry Bryant (Director of Reliability)

- Developed “One Domtar Lubrication” team (each mill has strengths, we grow as a team)
- Larry and our team formed relationships with key vendors to get us where we need to go
- Training and certification AMRRI
  - MRG Laboratories
  - Most MLAIII certified employees
- Setting goals and expectations in all mills
RELIABILITY PARTNERS
HURDLES OVERCOME

- Drive and Desire to improve
  - Lube Technicians desire to make a difference:
    - Rothschild: MLT1 or higher: Rod Behnke, James Clairmore, Dana Degner, Aaron Greisinger, Steve Krautkramer, Randal Meverden, Scott Selting, Travis Suchon, James Vachavake, Patrick Winnie
    - ICML – *Domtar has most MLA3 Certified professionals*

- Facts and Data to deliver consistent message
  - Oil Sampling
  - Many technical articles available that justify the need for change

- Tracking Success and Savings
  - Numerous examples of the program’s success.
  - Saves money, production and improves Safety. (Less unplanned work improves maintenance safety)

- Local Support
  - Management Support: Management is investing in Reliability and the Team is growing.
  - Maintenance Team Support: Coordinator and Technician buy in is expanding rapidly.
  - Production Team Support: Assisting with daily rounds

- Corporate Support
  - Reliability Director – Larry Bryant
  - Reliability Solutions Leadership Training, “One Domtar Lubrication” Team, Partnerships
WHAT’S NEXT?

- We are in the process of expanding our lube clean room and improving our oil testing lab/office area.
  - This expansion will reduce satellite storage of lubricants and improve our oil testing program
  - Building electronic lubrication routes
  - Looking forward to our next audit to identify strengths and weaknesses

- In the past it was difficult to get people to sign for the oiler job. It had to be done as a trial (so people did not have to make a long commitment) and we nearly had to force it on our lowest senior person. Today, we have much more interest in the program and do not expect to have trouble filling future openings.
In summary, the value of consolidating the Reliability department has exceeded our expectations. When looking back we do not believe anyone in our organization would go back to where we were years ago. Culture improvements are always hard but doing it during difficult cutbacks speaks volumes about our mill’s culture and relationships. This transformation was possible because of the people involved. It takes cooperation from the union leaders, management, the apprenticeship committee, and the technicians. Everyone is working together to make these improvements a reality. There is yet a lot of work to do, but these improvements to our structure will make us more competitive in our industry.
QUESTIONS

Standards to bring Success