



PROTECTING CRITICAL PATHWAYS IN THE FOOD PROCESSING INDUSTRY

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Machine condition monitoring and predictive maintenance are helping leading food processors avoid costly plant outages and unscheduled equipment repairs while delivering maximum uptime.



“The most competitive companies will not be looking at their maintenance departments as cost centers but as profit centers. The real value of maintenance isn’t fixing things when they’re broken. The real value of a maintenance department is to deliver plant uptime.”

- FoodProcessing.com

A 'Whey' More Modern Approach to Maintenance

What does a 1967 Plymouth Barracuda have in common with production capacity and uptime at one of the Rocky Mountain region's largest cheese processing plants? If you spend any time with Tim, the plant's Whey Side Maintenance Manager, you'll discover he's passionate about both.

Tim's love for maintenance began in high school when he paid \$125 for his first car, a 1967 Plymouth Barracuda. Still the prized possession in his garage today, Tim has spent countless hours maintaining his classic car from an almost forgotten era. Yet in spite of Tim's taste for classic cars; today, his approach to predictive maintenance in his whey processing department is about as modern as it gets.



Tim | *Whey Side Maintenance Manager*

"I remember the days when we would simply run our equipment to failure and find ourselves in fire fighting mode. With our MTS partnership, those days of downtime on monitored equipment are all but gone."



A Pivotal Partnership

By partnering with MTS, Tim has played a pivotal role in the cultural shift and maintenance approach at their plant during the past 15 years. "I remember the early days when I started working at the plant 25 years ago. We would simply run our equipment to failure and find ourselves in firefighting mode, Tim recalls. Since we started working with MTS in 2002, we've adopted a much more proactive, predictive approach to our plant maintenance."

Running In Turbo Mode

While certainly not the largest nor the most expensive equipment in the plant, the 500hp turbo fans are among the most critical in the processing path. These fans extract vapor from the whey product as it condenses. Inevitably, vapor collects on the fan blades, and eventually the fans will simply turn off—shutting down the operation. Another potential failure trigger with the turbo fans are the Babbitt bearings. When the bearings begin to wear, the tolerances of the

bearings "open up" to create mechanical looseness that shuts the fans down.

"With MTS' vibration monitoring, we know when to clean and balance the fans or replace the bearings," says Tim. Both of these maintenance activities can be done during shift changes or regularly scheduled maintenance windows. MTS vibration monitoring allows us to 'push the needle' so to speak in our daily operations without unexpected shutdowns."

Tim says this type of monitoring and maintenance activity has saved their plant thousands of hours of down time, labor and plant productivity since they've partnered with MTS. Today, when Tim takes to the open road in his 1967 Barracuda, vivid memories of his younger years flood his mind, but those days of unpredicted downtime and running to failure on monitored equipment at the plant are now just a hazy image in his rear-view mirror.

Vibration Analysis is the Maintenance Backbone of this Beef Processing Plant

“When MTS first approached us 17 years ago about their machine vibration monitoring, we were very skeptical. The practice of probing our equipment with special vibration sensors seemed like some sort of industrial voodoo,” recalls Roger, Maintenance Coordinator for a large Midwestern beef processing plant.

Industrial Voodoo or Insightful Analysis?

The perception changed quickly when MTS delivered their very first machine condition analysis report indicating that a particular piece of equipment was on the verge of failure. “This had historically been one of our most reliable machines, yet the machine actually failed within five hours after MTS delivered the report, resulting in a very costly line outage.” Roger tells the story as if was actually a fortuitous failure, forcing them to take a closer look at vibration analysis as a truly legitimate tool to predict potential plant equipment failures and outages.

Incredible Interdependence

Today MTS has its tentacles on every side of the plant, monitoring hundreds of pieces of critical equipment, including air compressors, blowers, centrifuges, dryers, gearboxes—the list goes on and on. Roger says, “We have incredible interdependencies with our equipment in each individual department. Each department is also incredibly interdependent on our other departments. For example, if we have a machine failure on the kill floor, it can create a cascading, catastrophic impact on fabrication, refrigeration, and rendering—potentially bringing plant production to a halt.”

MTS deals with these equipment interdependencies at the deepest levels by providing multiple readings on their most complex machinery including primary and secondary gearboxes, couplers, motors, bearings, etc. This allows them to pinpoint potential problems and save the plant significant troubleshooting time and any unnecessary repairs or replacements.

Department	Critical Machinery Monitored by MTS
<i>Kill Floor</i>	Over 220 pieces of equipment
<i>Cooler Side</i>	At least 10 gearboxes
<i>Fab Side</i>	At least 12 gearboxes
<i>Refrigeration</i>	Several air compressors
<i>Rendering</i>	Centrifuges, grinders, dryers and blowers

CUSTOMER CASE STUDY 02

Calculating the Costs:

As one of the region's largest beef processors at 5,500 head of cattle per day, the plant doesn't measure downtime in days or hours—they measure it in minutes. For example, any unscheduled downtime in the slaughter department costs the company \$100 per minute; whereas, outages or unplanned downtime in fabrication costs \$200 per minute. Conceivably, a complete plant shutdown could cost the company close to \$1,000 per minute, or over \$50,000 per hour—and that doesn't even factor in lost revenue; it only includes lost labor, production, power, etc. With these types of numbers, it's easy to see that MTS has saved the plant millions of dollars in averted downtime and outages over the years.

Beyond MTS's extensive machine condition monitoring, timely reporting, and massive maintenance savings, Roger says the thing he appreciates most about MTS is the partnership. "We've developed a long-standing relationship of respect and trust with MTS that has endured through four company ownership changes during the past 17 years." With this type of track record, there's no doubt MTS will remain an integral maintenance partner with the plant for many years to come.



Roger | *Maintenance Coordinator*

“We’ve developed a long-standing relationship of respect and trust with MTS that has endured through four company ownership changes during the past 17 years.”



Gearing Up for Great Savings: MTS Prevents a Million Dollar Production Loss

If a person you trust said you could earn or save a million dollars by working this weekend, would you cancel your Saturday tee time or skip your Sunday morning worship service? Maybe. Does this sound like some kind of scam? Probably. Is this what MTS recommended to one of its clients? Absolutely.

As sketchy as this scenario sounds, this is essentially what MTS recommended to a Texas-based beef processing plant. MTS vibration data had recently revealed an alarming pattern in the client's beef processing mainline gearbox.

Based on the impending failure forecast in the vibration report, and knowing that a mainline gearbox failure would shut down the entire plant production, costing the company more than a million dollars, MTS recommended urgent replacement of the mainline gearbox at the earliest opportunity. While it's certainly not the way the maintenance team wanted to spend a Friday evening and possibly a full weekend, they readily acknowledged the recommendation in the MTS report and scheduled the replacement.

When the plant maintenance team filled the replacement gearbox with oil on a Friday evening, the oil ran right through it. Fortunately, because they had proactively scheduled the replacement on a weekend, the team had time to source another gearbox and get it installed and tested prior to the Monday morning production run. While the rest of the company enjoyed their weekend off and returned to business as usual on Monday, the maintenance team enjoyed the satisfaction of knowing they had saved their employer more than a million dollars.



Milt | Senior Vibration Analyst

“If the mainline gearbox would have failed during normal production, the cost to the company would have been greater than \$1 million.”

