

Closing the Loop with Production and Maintenance Automation

Close your eyes and think about the most critical asset on your plant floor. Now, ask yourself these questions:

- Do you have a process for determining the cost associated to that asset going down?
- Do you have a process for determining the root cause of unplanned downtime when it occurs?
- Are you performing any preventative maintenance measures to ensure reliability?
- Do you know the financial impact of those preventative maintenance practices to your business and your customers?

If you don't know the answer to these questions, you are probably racking up high costs and aren't even aware.

Machine Health Impacts Every Plant-Floor KPI



AVAILABILITY

Unplanned Downtime
Planned Downtime



QUALITY

Scrap
Machine Startup Rejects



PERFORMANCE

Micro-stops
Slow production



OEE

From the above, we can see that two of the biggest variables to OEE are unplanned downtime and scrap because they affect availability and quality – two major pieces of the OEE equation.

If your machines are not running properly, it's common to experience high levels of unplanned downtime and scrap rates because machine health typically has a major impact on your plant-floor KPIs.




So how do we fix that?

We must improve asset health.

In order to improve asset health, maintenance maturity must advance. Let's use changing the oil in your car as an example.



Reactive Maintenance: Run to failure

Wait until your car breaks down on the side of the highway to change your oil.

-  **High cost:** You must call roadside assistance and pay for a tow
-  **Low availability:** Your car is unavailable to use when you are waiting for roadside assistance and repairs
-  **Low machine health and reliability:** Chances are there will be damage to your engine due to lack of attention to your oil cleanliness




Preventative Maintenance: Based on time or usage

What we are used to when it comes to changing the oil in your car. (ex. Changing oil every 3000 miles). Might be effective for your car, but there are some drawbacks:

-  **High cost:** Spending money on changing the oil too often
-  **Low availability:** Every time your car is in the shop getting an oil change, it is not available for you to use

Condition-Based Maintenance: Based on specific conditions, backed by data

Imagine your car's engine had sensors that could measure the viscosity of the oil and detect when it is too dirty.

-  **Low cost:** Only paying for an oil change when it is absolutely necessary
-  **High availability:** You can plan for the maintenance based on data and your driving schedule
-  **High efficiency:** You can be alerted when it is time to change the oil

Based on the above example, condition-based maintenance is the ideal option due to the lasting impact it will have on your machine health and reliability and your bottom line.

A real-world example

A metal stamper uses a stamping press to create holes and form metal components into various shapes. The tonnage on the stamping press rises, indicating that the tool is getting dull and losing its ability to form the metal and stamp a clean hole through the part. To avoid high scrap rates, the press must be shut down—often in the middle of a shift—to replace the tool, causing significant amounts of unplanned downtime.

With Plex, the metal stamper can track tonnage in real time and set thresholds to be alerted when the tonnage begins to rise. This indicates that it's time to start planning a tool change.

Based on the data and the machine running out of tolerance, the tool change can be planned for a time when the machine is not being used. With this powerful capability, the metal stamper can significantly reduce the risk of scrap and unplanned downtime.



Machine Connectivity is Key

Connecting to your machines provides the basis for automation of production and maintenance practices. With machine connectivity, you can:

- Identify and track real-time operational KPIs through the use of dashboards and scoreboards
- Automate production recording, data capture, and more in Plex
- Track and manage asset health and reliability and advance maintenance maturity

Contact a Plex representative to learn how to connect to your machines today!