

# What SAP PM can Provide to Plant Leadership

## Plant Manager's Perspective

As a plant manager, it is difficult for the people in my plant to understand how large a percentage of my time is spent outside the plant, either with corporate or civic duties, and that what looks like help to me is ensuring that operational and maintenance challenges within the plant are managed well. Now that we have an SAP Information Systems structure in place, I need effective reporting, high enough level that I can quickly grab the report's headlines and also accurately represent the detail that lies beneath the headlines. I am no different than anyone else, I need data to fight battles and support your efforts.

From the Maintenance Team, here are the 3 key information points I need (after, of course, assuring our Personnel Safety and Legal Commitments)

- **Are we reducing our Equipment Reliability Production Losses?**
- **Are we managing our Maintenance Costs well?**
- **Are we predictable and dependable on our Equipment Maintenance Tasks?**

While in general, I want to the answer to all three to be “yes”, for the answer to have value we must agree on how those performance indicators are measured as well as the targets we have agreed to. Therein lies the challenge, communicate to me how these performance measures are obtained so I can trust the reporting and data I am seeing. I also understand that the only justification for the effort to input data into SAP Plant Maintenance is to process, analyze and communicate information that allows the user to make effective business decisions. I am relying on the large investment in resources and time we are making in SAP PM implementation and training is providing the information we need to run this plant well.

## Plant Maintenance Manager's Response

I clearly understand your requirements and will do all in our power to manage those priorities as you have laid them out. I also recognize that in SAP we have a powerful tool to report on money and time, after all the story is often accurately told by “*following the money*”. What follows is how we are measuring and reporting that information to you and the rest of the plant. We want to ensure that the plant's investment in time and money translates into the quality of information input into SAP. Our technicians are the source of much of this data and not driving “Wrench Time” at the expense of SAP time is of great help. After all, our job is to keep the equipment running, not just fixing equipment. To measure data quality, we employ SAP PM health metrics to measure how well and how often we enter the data needed to properly feed the information system.



Specifically, your three priorities are measured as follows:

## Are We Reducing our Equipment Reliability Production Losses?

Our plant has a standard process to measure both Equipment Reliability Caused Planned and Unplanned Downtime as part of the OEE Targets. Because that process is managed within production, we need to also capture the Equipment Reliability Issues within our Notification Process so we can relate the Production impact to our improvement strategies, typically by Equipment Type. We accomplish this entering the following information in the Notification:

The screenshot shows a SAP 'Display PM Notification: Malfunction Report' window. It contains several sections of data:

- Notification:** 10000043, Z1, Drive Speed is Erratic
- Notific. Status:** NOPR ORAS, CRTD
- Order:** 10000083
- Effect on the system:** V101.01.002.0001 (Funct. loc. affected), RM RCV Styrene Unloading (Equipment affected), Simotics NEMA DP-4PZ AC VS Motor (Equipment affected), 3 (Effect), Prod Rate = 0 (Downtime)
- System availability:** Cond.bef.malfuncn: 3 EQ Operating Erratically, Cond.alt.malfuncn: 1 EQ Operating as Designed
- Item:** Object part: VFD, BV04 Braking Resistor; Damage: MECH, CMOG Spurious Operation; Text: Braking Resistor is Burned; Cause: OP/MAINT, 5033 Maintenance Error; Cause text: Connection on Resistor was loose
- Malfunction data:** Malfuncn.start: 08/19/2019 12:24:00, Malfuncn.end: 08/19/2019 14:58:00, Breakdown dur.: 2.57

Callouts from the right side of the image point to specific fields:

- Box 1: 'The designation of the Functional Location – Process Area Affected' points to 'V101.01.002.0001'.
- Box 2: 'The Production Rate Impact' points to 'Prod Rate = 0 (Downtime)'.
- Box 3: 'How and Why the Equipment Failed' points to 'Braking Resistor is Burned' and 'Maintenance Error'.
- Box 4: 'The Production Impact Timing and Duration' points to the 'Breakdown dur.' field.

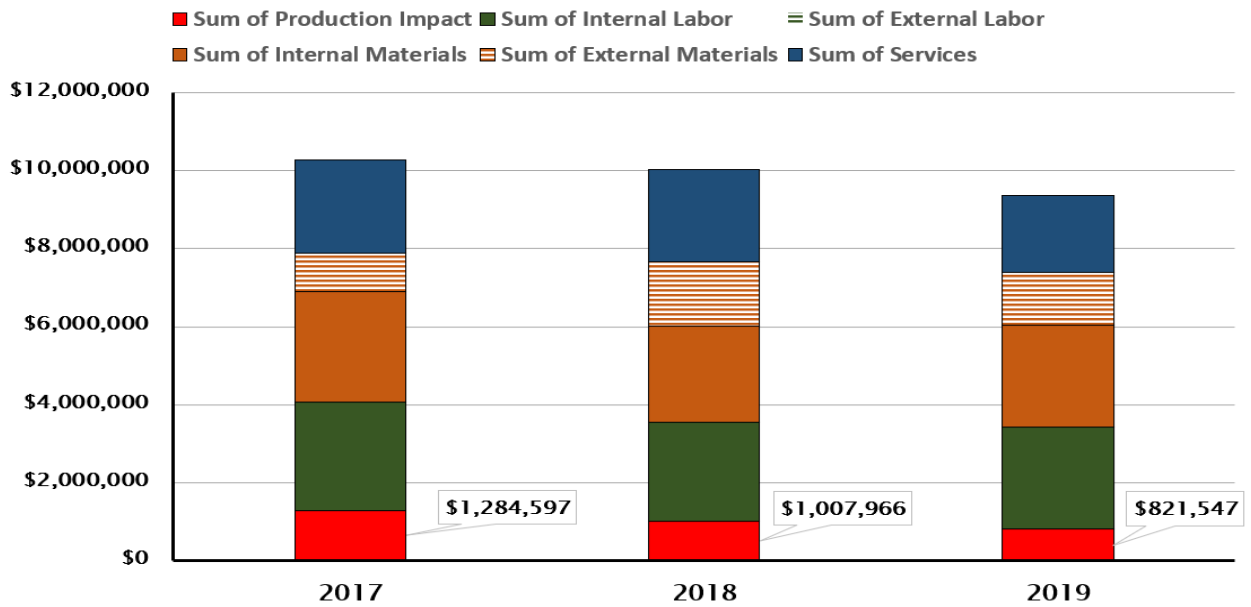
Every time there is a Production Impact by an Equipment Failure it is tracked with the data above. With this information we can take the hourly impact and get the production downtime cost rate for the process, in this case 3.9 hours \* \$1,400 / Hour to calculate the Production Loss as \$5,460. We can track this by Equipment, Equipment Type, or Process, to determine where the improvement focus needs to be. The improvement strategy is then fueled by the relative impact as a priority, and the failure coding as shown above as the starting point for opportunity identification and resolution.

We do consider Production Impact as part of our total cost of Equipment Maintenance, so we include the Production Impact as part of our Cost Tracking as shown below. It is very important to us that we show improvement every year, as we have here:



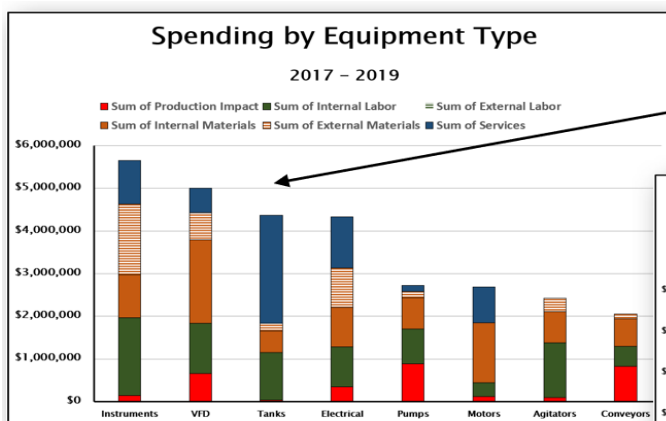
# Maintenance Spending

2017 – 2019

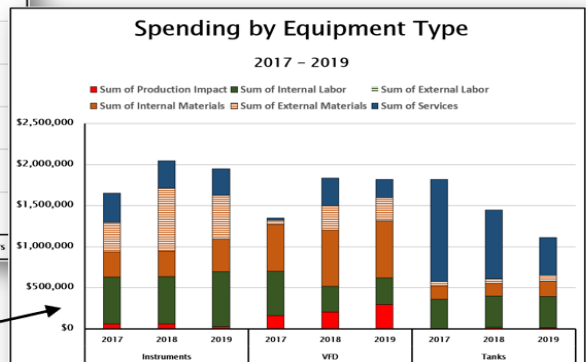


## Are we Managing our Maintenance Costs Well?

As shown in the chart above, we want to improve our Maintenance Costs from year to year and we do that by diligently tracking our costs in ways that allow us to measure opportunity in manageable parcels. The first and arguably the most important step is to assign the work to the correct asset, so we can classify the opportunity by both Equipment Type and Process. While the Process opportunity presents itself in the Cost Center reporting that is standard in our organization, aligning by Equipment Type allows the skill divisions within Maintenance to focus on their specialties as shown below:



Our 3 biggest opportunities are Instrumentation, Variable Frequency Drives, and Tank Reliability Issues



And the data is telling us that we have improved on Tank Reliability Issues, we have not quite turned the corner well on Instrumentation and VFD Reliability Issues, be we are working diligently on our improvement plans for each.



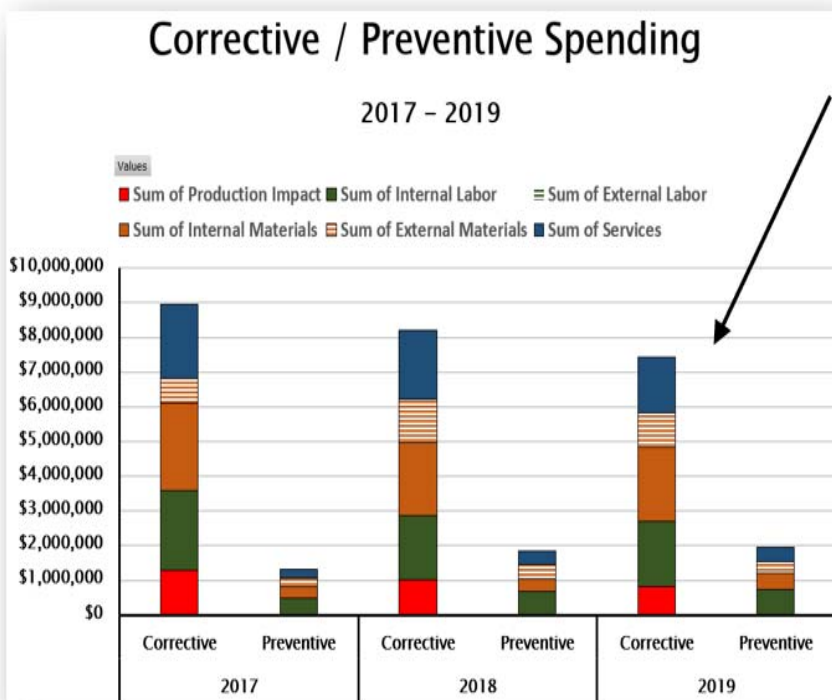
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We have imposed a financial discipline to capture costs and classify them on every Work Order in a way that can show the Organization where we can improve:

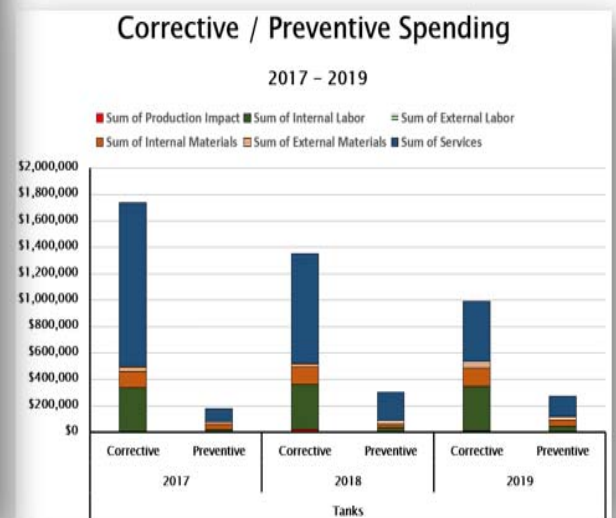
Group/Description	Est. costs	Plan costs	Act. costs	Currency
Costs	9,355.25	9,355.25	9,295.25	USD
Maintenance Labor- Internal	750.00	750.00	690.00	USD
Maintenance Services- External	1,750.00	1,750.00	1,750.00	USD
MRO Materials- External	6,510.00	6,510.00	6,510.00	USD
MRO Materials- Internal	345.25	345.25	345.25	USD

We scrutinize our costs on every Work Order, not only by measuring our Estimated Costs versus Actual Cost – Our ability to Plan and Execute well, but measure items like Internal versus External Material Cost so that we understand that our Storeroom Inventory Strategy minimizes Inventory Costs.

We also understand that our long-term strategy is to become an excellent Preventive Maintenance Organization and strive to avoid Equipment Failures altogether, so an important measurement of our progress in that area is measuring that spending ratio:



We are seeing the increase in Preventive Maintenance Spending is paying dividends in reduction of Corrective (and Overall) Maintenance Costs, especially for Tank Reliability.

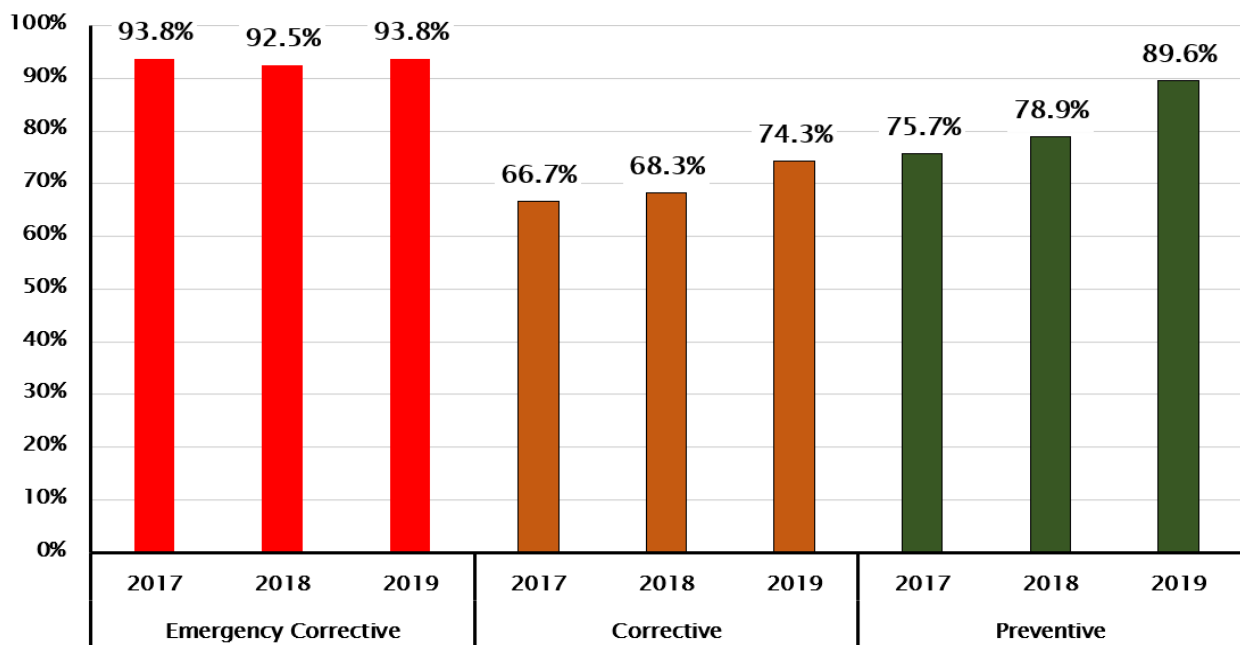


# Are we Predictable and Dependable on our Equipment Maintenance Tasks?

We clearly understand that doing what you commit to do is important, but we also understand that the best deliver when they commit to deliver. We measure our ability to deliver on commitments for both Corrective and Preventive Maintenance. It is a given that we deliver Emergency Maintenance on time, but it is also important that we improve on Corrective Maintenance Delivery and hold sacred Preventive Maintenance delivery. We measure this according to our weekly schedule.

## Maintenance Schedule Adherence

2017 – 2018



We are using the metrics above to demonstrate our commitment to improving Equipment Reliability performance in the plant while keeping a keen eye on the bottom line. We are also committed to use time and currency as our reporting units of choice because we are committed to using the units the all the modules of SAP use to better communicate our performance.

