THE STRATEGY OF MAINTENANCE

What is "F I W I B"?

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We often don't think of maintenance in strategic terms – usually it's thought of as some kind of *necessary evil* that involves cleaning and repairing stuff.

But if we think of maintenance as "getting the most out of what we bought," then *maximizing use life* becomes the objective.

There are several strategies for maintenance. No one strategy is always the most effective. In fact, the most economical strategy will depend on what you are doing. Often, the best choice will depend on the cost of production *downtime* in the event of a component failure.

Here are three:

- FIWIB
- Spare Tire
- Scheduled PM

(**A**) FIWIB – "Fix It When It Breaks." In a laboratory or in low-volume production, this may be an O.K. plan. It's easy enough to stop and replace a part whenever it needs; a part will fail whenever it's ready to fail, *whether we are or not*.

(**B**) "Spare Tire:" In production, where a line can be stopped momentarily, a spare power supply and/or spare irradiator(s) can be kept available for 'swapout' when needed. Any offender can be repaired off-line and then be available. The repair can be limited to whatever part has failed (as in FIWIB), or the module completely refurbished.

(**C**) "Scheduled Maintenance:" For production with a high bill-rate (cost per minute), or production that simply ***cannot*** be interrupted by maintenance, the lamps and power supplies can be refurbished (with new consumable items) after a fixed number of running hours (for example, 2,000 or 3,000 or 5,000, depending on operating stress).

Plans **A** and **B** generally yield the lowest component cost, because they are operated to (or nearly to) end-of-life. With Plan **A** (FIWIB), the rate of interruption to the production machine is the highest, as failures eventually occur at random. Plan **B** is a good compromise, but does require the availability of spare major components.

Plan **C** can get the highest *uninterrupted* time from a system – it essentially starts all the "wear items" from time zero. Plan **C** yields the highest overall time-to-failure, as failures are not occurring at random. This can be the most economical choice for high-operating-cost production lines, even though it has a higher cost per part associated with it.

With any of the above maintenance schemes, several items must be inspected regularly: (1) air filters for irradiators and power supply intakes, and (2) bulb and reflectors. This inspection schedule depends *entirely* on the site-specific contamination – a high frequency of replacement or cleaning indicated that *conditions must be changed.* (In other words, if too much airborne *stuff* is getting onto reflectors and bulbs, then either filtration is not sufficient or the intake air is just too dirty and should be taken in from somewhere else).

Clearly, an inspection schedule is the key to a maintenance and replacement schedule for these items.

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