Assessing with Uptime and applying some fresh thinking

Long term health care facility

Building Services Response Times for Requests

Request	Response Time (working days)
Flood or leak	Immediate
Loss of power	Immediate
Any repair that represents a safety risk	Immediate
Air temperature adjustment	Immediate
Report of strange odour in area	Immediate
Bed repair	Immediate
Ceiling lift repair	Same day
Light out or ballast replacement	Same day
Plugged toilet	Same day
Replacement of shower hose or shower handle	Same day
Broken paper towel or toilet paper holder	Same day
Door repair	Same day (if possible)
Commode chair repair	Same day (if possible)
Plumbing repair	2 days
New appliance safety inspection	2 days
Removal/Installation of grab bars	2 days
Key request	4 days
Data line installation	14 days
Carpentry work	14 days, pending approval
General maintenance work	5-7 days
Installation/Removal of Air Conditioner	10-14 days
Painting	21 days, pending approval
Space Alteration	21 days, pending approval

Situation

This health care facility had concerns about maintenance of its facilities due to problems it was encountering with air flows and containment of pathogens, excessive condensation on windows in the winter months, reliability of back-up power and a huge forecast of refurbishment costs due to a facilities condition report. The CFO felt that the replacement requirements were excessive, but didn't have the technical basis on which to counter the report's recommendations. We were engaged to review maintenance practices, look into air flows and HVAC problems, and provide a second opinion on the engineering study that had been carried out.

Solution

Our review of maintenance practices based on our "Uptime Pyramid of Excellence" model revealed a number of deficiencies in how maintenance work was being managed and executed. Although the facility had a maintenance management system, it was being underutilized. An almost total lack of communication back and forth between maintenance and its clinical customers had led to a sense that maintenance pretty much did only what it wanted. We introduced the facility to our model using Uptime training workshops and proceeded to help the maintainers develop effective work management processes including protocols for communication of work priorities and scheduling expectations.

After review of the engineering report we concluded that the methodology used was based primarily on aged replacement of assets based on tables of expected useful life for each asset class. Our reliability background enabled us to recognize that approach was highly flawed. Most assets do not fail solely due to aging and usage. The report had recommended major replacement programs for a number of installed systems, most of which did not have aging characteristics. The work would have been expensive and incredibly disruptive, rendering whole wings of the hospital unusable for long periods of time. Considering the long term nature of care being provided and large number of residents, this was clearly impractical and in our opinion, inappropriate for the assets.

We looked at each system from the perspective of maintainers, not engineers. Maintainers seek to extract value over a long period. Engineers seek to design and run projects.

We asked if each of these systems be sustained with ongoing maintenance efforts, and without the need for wholesale replacements? In most cases the answer was yes, but only if appropriate maintenance practices were put into use, and maintenance practices did need to improve. We were later engaged to help with that effort as well.

Since many of the systems were electrical, we carried out initial assessments using infra-red thermographic scanning techniques coupled with visual inspections. We found that most of the installed

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systems were in fact in very good condition and nowhere near the point of needing replacement. We also found isolated components (breakers, switches, sensors, controls) that were indeed showing signs of distress under load. Those had been missed altogether in the condition assessment report and its broad brush approach. Those faulty devices were replaced on the basis of their deteriorated condition, not merely because of age.

In taking this approach that considers the nature of aging and failures in various equipment, we helped the facility save approximately $10 million in forecast replacement costs, and a great deal of patient and clinical disruption.

Our investigation of air systems concluded that air balancing was needed. Over time the facility had modified rooms and moved walls, disrupting the originally designed air flow patterns. Subsequently, we've discovered this to be a common occurrence in hospitals. The result was that areas that should have positive air pressure were in fact negative and airflows were drawing contaminants and contagion into areas where they should be expelled. An air balancing project was executed and air flows adjusted to match the current building configuration. Problems with moisture on windows, doors being blown open, others being sucked shut and difficulty containing contaminants were all eliminated.

Results and reflection

We don't know what we don't know. In this case, the hospital staff had been maintaining the facility in much the same way for many years. Condition assessments were accepted as a norm in the "industry" and replacement was the default asset management strategy regardless of the nature of the assets, how they failed and whether or not they could continue in service for much longer. Our view was quite different, being maintainers and reliability engineers, we see replacement as a last resort, only after an asset has begun to show signs of cumulative deterioration and lagging ability to perform its desired functions. We sustain what the assets do, not what they are.

We were able to help the facility avoid considerable capital investment merely to continue to do what it has been doing. With air flows we sought a root cause of the condensation problem and the cross contamination problems and realized that air flows that were probably designed well initially, were no longer going where they should. Reconfiguration of the HVAC set up through air flow balancing proved to be a relatively inexpensive solution to what had become a long standing problem that no one fully understood at the facility. A fresh set of eyes with critical thinking and a sound understanding of reliability and its improvement were indeed helpful.

To learn more

We have a deep expertise in maintenance and reliability as well as the various engineering disciplines, and project management. Having been in all those roles, our consultants do not have blinders on and they have the experience to know that there is always another way to look at a problem. We don't just follow cookie-cutter approaches and deliver courses with inexperienced trainers. Talk to us – creative solutions are a passion of ours. Your situation is unique and it requires fresh eyes and thinking.

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