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The technology "toolbox" available to today's maintenance department is without precedent—*an d can be had, in many cases, for less than the price of a daily cup of gourmet coffee!*

Many of the tools within our technology toolbox are designed specifically to interpret and assist users in easily communicating what is being seen, heard or felt as a maintenance problem plays out and/or during post-failure evidence gathering. For this article, we will deal with the powerful communication ability of a real visual image to explain what we can and can't see with the naked eye.

The news media has long recognized the important role that a picture can play in telling a story. Pictures also are a highly effective way to tell stores in the maintenance realm.The news media has long recognized the important role a picture can play in telling a story. Who can forget the thought-provoking types of print images carried in publications such as
Life
and
Look
magazines—
images accompanied by and in need of very little text to describe them
—and today's television news shows that require few words to explain their moving and still images? Pictures also are a highly effective way to tell stories in the maintenance realm.

With the advent of inexpensive digital technology for capturing, storing, displaying and transferring images, a maintenance department can easily tap into the power of a simple digital camera and use it to capture both still and moving shots, complete with sound. These images will come in a format ready for any word processor, CMMS (Computerized Maintenance Management System) or e-mail system—*for not much more than $100!*

Corporations recognized for their best practices within maintenance are now equipping all of their maintainers with personal digital assistants (PDAs) that have the capability to act as a fully functioning high-definition digital camera system. More sophisticated PDAs also double as cellular telephones capable of uploading and downloading voice, text and graphics to a CMMS against a work order, or to any e-mail account in the world, instantly.

Communicating with digital images

In the past, many maintenance departments have not performed as well as they could in their maintenance planning function, choosing, instead, to accept little or poorly requested information regarding the asset problem. The problem is amplified further when the planner merely passes on that same instruction on the work order, without viewing and verifying the problem personally. This results in maintainers acting in the role of planners—*i.e., having to review the situation and develop their own detailed job plan and parts list on the fly, at the job site* .

You'll want to begin fully harnessing the cost-effective power of digital and IR images in your maintenance efforts ASAP. In a best-practice situation, a planner will build the detailed job plan, bill of materials, tools and permit requirements by visiting the job and photographing the problem. The photo image(s) will mirror directly what the planner is seeing, be used contextually to build the job plan and get attached to the work order. This practice allows the maintainer to immediately identify the intensity or severity of a problem and repair situation before the job begins. It also allows an accurate history of the problem to be kept in the CMMS records and job bank to be compared against in similar future failure instances. In the cases where the planner is unavailable to see the job personally, an operator or supervisor can arrange to send a number of photographs of the problem so that the planner can plan the job indirectly. Or the planner may choose to send a maintainer to investigate the failure, take pictures and build a job requirements plan under an investigative type work order.

This practice of documenting failures through images can greatly assist with warranty claims. In such a scenario, a camera is used to take moving or still images as the problem is occurring in real-time. Those shots can be transferred almost immediately to the Original Equipment Manufacturer (OEM), who is better able to quickly suggest a suitable course of action to follow—*and ship any required parts that day*.

Communicating with infrared images

The other image more readily accessible to the maintenance department than in the past comes by way of infrared (IR) thermographic technology. An infrared thermal image will depict an outline of the real image, filled in with different colors that represent ranges of heat radiating from the subject. White represents the hottest zones, followed by red, then yellow, with blue representing the coldest zone. Even the least expensive IR cameras can sense and display temperature differences in half-degree increments or custom colors, so always read the interpretation key on the image.

Technology is continuously marching on. You can’t afford to let the parade pass you or your organization by.Because so much of maintenance failure is affected in some way by heat, the IR image can help us plan for failure and show us exactly what to maintain— *in a true non-destructive manner*. For example, an IR image can identify deteriorating or missing insulation in refractory ovens and building envelopes (walls and roofing) or on lagged pipes. It can identify hot or cold air loss in heated or refrigerated systems, windows and seals. It can identify electrical circuit and ground faults, fuse faults and loose connections. It can identify friction sources and effectiveness of the lubrication methods and systems, and much, much more!

Get out of the dark

Technology is continuously marching on. You can't afford to let the parade pass you or your organization by. If you're not doing so already, you'll want to begin fully harnessing the cost-effective power of digital and IR images in your maintenance efforts ASAP; the cost may be far less than you might have thought.

For example, IR imaging systems are now available for under $5000. (What does an hour or even a minute of downtime cost around our operations?) When the output of these types of systems is presented alongside photographic images of the same subject, they provide compelling evidence that can be easily communicated to any other department to help it understand both problems and proposed solutions, as well as show that repairs were successful—*without much verbiage*. How better to demonstrate that a picture really is worth more than a thousand words! **MT**

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