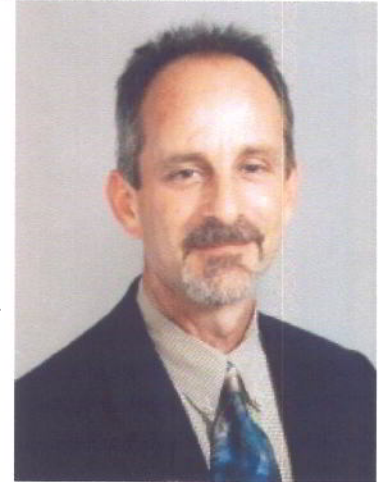




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## PREVENTATIVE MAINTENANCE PLUS

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Preventive Maintenance by definition involves the regular inspection, testing, and replacement or repair of equipment and operational systems. In buildings this often times involves mechanical, electrical, and plumbing systems. We all know that air handling equipment, motors, shafts, pulleys and belts need periodic inspections and routine work such as filter and belt replacement to keep the equipment running as intended. Many building engineers and managers track a Preventive Maintenance (PM) Program on databases that can notify or produce work orders on a pre-determined schedule for the various elements that are included in the PM Program. The goal of a functional PM Program is to avoid or mitigate the consequences of equipment failure.

Preventive Maintenance can be further defined into categories such as Corrective (repairs) or Predictive (major equipment / parts replacement). As with all equipment parts wear out, break, or malfunction and need to be repaired or replaced at some point. A major benefit to a building and occupants by having an effective PM Program is fewer complaints from occupants, more efficient equipment, less energy costs, and a longer life span of the building. In today's environment energy is a major concern to property owners and facility managers. Many Owners, Governmental Agencies, and Property Managers are increasingly developing Energy Conservation Programs, and a PM program is an integral part to consider in the development of Energy Programs.

In addition to an effective PM Program there are other elements and systems that can be added to the program to enhance and improve any existing system and function of a building including:

- Perform quarterly checks on IAQ Comfort Parameters to include measurements of temperature, relative humidity, carbon dioxide, and carbon monoxide.
- Consider installing real time monitors for the above parameters and consider including sensors for volatile organic compounds (VOCs) and total particulate. Monitors are available that can be linked into the building automation system or accessed via an Internet connection for remote monitoring.

- While sometimes not included; the monitoring of the building envelope is a critical issue that should be considered in a PM Program. Periodic inspections should be performed of the roof system, building veneer/cladding, windows, and sealants. Considerable cost saving can be realized by detecting failures early on a building envelope.
- Building pressurization should be verified routinely to prevent buildings from becoming negative relative to ambient conditions. Negative pressure buildings can cause a host of humidity and moisture issues resulting in increased energy costs.
- Drainage from rain leaders and building grounds should be routinely observed. All drainage and moisture should be directed away from a building (positive drainage) and not allowed to accumulate or flow towards the building. This can be a critical problem if not identified and addressed in the early stages of design and construction of a building.
- Have plans in place for sudden water losses inside a building. The amount of water that leaks or escapes from equipment and piping has a direct relation to costs of mitigation and repairs from the damage involved. All maintenance personnel should know where shut off valves are located in the event of sudden failures. Devices are also available that can sense excess water flow in piping and automatically valve off piping systems.
- While not technically a part of Preventive Maintenance, other environmental issues should be identified that could have impact on building occupants and personnel. These would include identification of asbestos containing materials, lead based paints, mercury containing light tubes and thermostats.

In today's "built" environment, good Preventative Maintenance programs and properly trained personnel are essential. There are only positives and cost savings to be had by being pro-active in building management.

#### ***About the Author:***

Donald E. Cole brings over 28 years of environmental, forensic building investigation, and litigation expert witness expertise to the team of Gobbell Hays Partners, Inc. (GHP). Mr. Cole is well-versed in most areas of environmental investigation and remediation design in buildings of all types. Mr. Cole has also managed numerous projects related to environmental abatement and controls in medical, private, and public facilities across the United States.

Mr. Cole's extensive project portfolio includes asbestos surveys, mold/moisture assessments, IAQ investigations, environmental abatement design, demolition design / management, Phase I Environmental Site Assessments, development and managing Preventive Maintenance Programs, construction moisture management observation, industrial hygiene, construction litigation expert witness testimony, and pest bird management and controls. Mr. Cole can be reached at (615) 782-6876 or [dcole@ghp1.com](mailto:dcole@ghp1.com).

