

Building Diagnostics

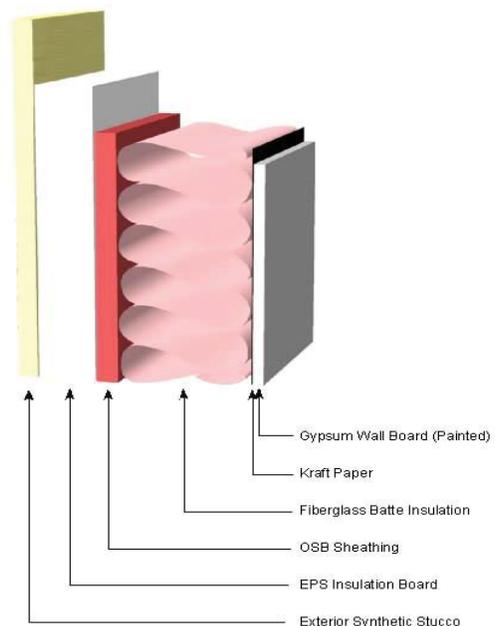
What is Building Diagnostics?

Building diagnostics is the science and art of investigating, analyzing and integrating the operation of building systems to achieve optimum performance. Most buildings share common features, but for the most part, despite this amazing repetition, each one is a singular item unique unto itself. Like living organisms, buildings have evolved from the very simple cave dwellings to the very complex such as the semiconductor fabrication facilities. With this increasing complexity comes increasing interaction between various systems that make the entire thing work. Like a human human, building systems need to work cooperatively to optimize the overall performance. If a system is misaligned with the others or operating sub-par, the overall performance is below expectations & could become dangerous or unhealthy.



MDC provides the following Building Diagnostic services:

- Building Envelope and Facade Analyses
- Stress Analyses for Structural and Building Systems
- Energy Use Analysis and Consulting
- Due Diligence Investigations & Capital Planning and Reserve Fund Studies
- Performance Audits & Performance Measurements



Why MDC?

MDC's extensive expertise in the areas of forensic engineering and forensic project management coupled with our professional staff's considerable experience in the areas of design, construction and operations provides us the skills and knowledge necessary to spot trends, anticipate potential problems and capitalize on opportunities. We understand the integrated nature of complex building systems and how to analyze and optimize their operation for economical, effective & reliable performance.

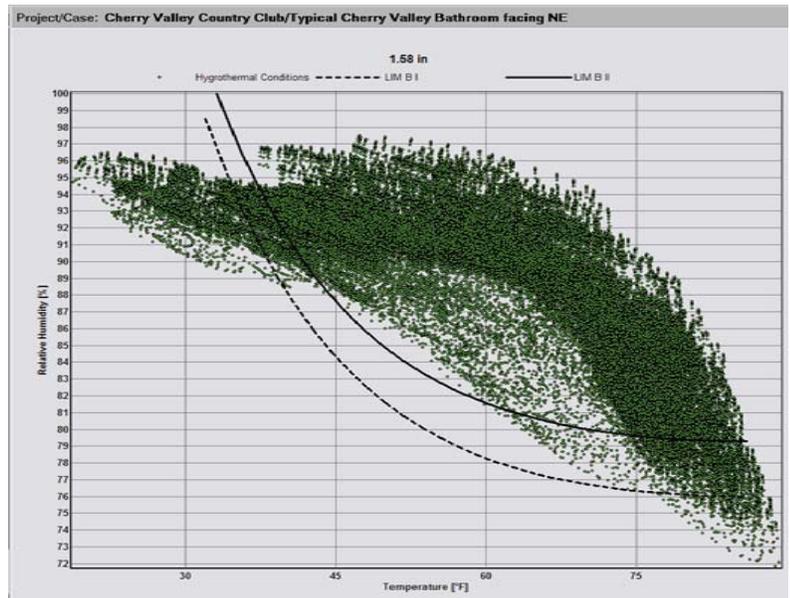
MDC provides complete overview & advisory services with respect to optimizing your building operation as well as offer some very specialized analytical services in key areas.

Building Diagnostics

WUFI Advanced Modeling Techniques

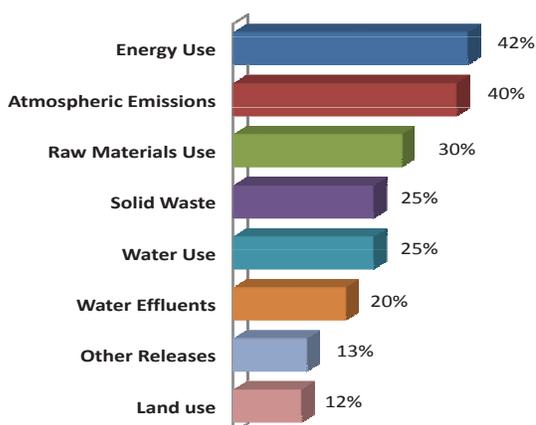
WUFI Analysis uses actual hourly weather data, building orientation and solar data to create boundary conditions that are realistic of the actual exposure conditions. A WUFI simulation considers the simultaneous effects of both heat and moisture on the building envelope. Rain and solar radiation are considered on exterior surfaces. Individual hygrothermal properties of each material in the building system are accounted for in each layer of the building section, including properties such as thermal conductivity that vary according to the humidity level in some materials. The resulting data are then displayed in graphical form and provide a time related history of the seasonal variations of the conditions within the building envelope system. WUFI results have been validated by actual laboratory tests and outdoor weathering tests.

The adjacent graph is relating Temperature (x) and Relative Humidity (y). The dashed and solid curves, known as isopleths, show the points at which mold will germinate and/or grow. All points to the left or below the dashed isopleth are safe. Points between the dashed and solid curves show where mold will germinate, but will not grow. All points to the right of the solid isopleth are harmful and will result in mold growth.



Environmental Impact of Buildings

Percentage of U.S., Annual Impact



Sustainability Consulting

Taking a view of a building as a part of an overall resource footprint, an Owner might want to look at how that building fits into the total resource use profile of one's organization. A reduction in that total footprint might be the goal of sustainability analyses and programs.

Keep in mind that the move towards sustainability in the business world can be driven by more than just an attempt to 'be nice to the earth.' An organization with a reduced demand for resources per unit output is an organization that has reduced its "cost of goods sold" and enhanced its bottom line. MDC can help your group develop a sustainability program, analyze your footprint, and develop ways to reduce that footprint.

- Condition Assessment and Analysis
- Benchmarking
- Incentives Inventory
- Strategy Development
- Implementation Planning
- Monitoring and Documentation