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BUTLER MANUFACTURING™ SPEARHEADS METAL BUILDING SYSTEMS INITIATIVE

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The entire construction industry finds itself on the cusp of a revolution in how facilities are designed, built and even operated. The trend toward “green building” is rapidly changing design, materials specifications and operational routines for a variety of facilities. The axiom that a whole is the sum of its parts was never more relevant than in today’s facilities construction industry.

That has been particularly true in the metal building systems industry where the mix of disciplines and sum of the material parts have created optimized structural, roof and wall assemblies that are uniquely interdependent.

“Our type of construction customarily instills a level of predictability in terms of cost, erection time and quality,” said David E. Evers, PE, vice president of research and development for Butler Manufacturing™ and chairman of the Energy Committee for the Metal Building Manufacturers Association. The growing interest in applying metal building structural, roof and wall assemblies to “green” buildings has led to their inclusion in the development and acceptance of a tool known as the EcoCalculator for Assemblies developed by The Athena Institute, in association with the University of Minnesota and Morrison Hershfield Consulting Engineers. (<http://www.athenasmi.org/tools/ecoCalculator/index.html>). This software provides architects, engineers, contractors and others instant access to Life Cycle Assessment (LCA) for hundreds of common building sections, including a number of typical metal building assemblies.

Butler Manufacturing spearheaded the initiative to include metal building assemblies in the database the EcoCalculator uses to quantify - and qualify - embedded variables in proposed building construction. The EcoCalculator takes into account how a qualitative change in any part or particular assembly affects the entire structure, either improving or detracting from the sustainable traits. The development of the EcoCalculator was inspired in many ways by the US Green Building Council’s (USGBC) LEED® Certification Program and a USGBC representative serves on the Athena EcoCalculator Advisory Council.

The USGBC has included the software tool in a pilot LEED credit program to demonstrate it as a credible LCA tool for achieving another potential credit in the current LEED certification system.

“Metal building system assemblies can already contribute several credits toward LEED requirements, and the LCA can potentially identify a project’s eligibility for another credit toward LEED Certification.” Evers noted.

LCA takes into account the total environmental impacts of a product, including the transportation impacts associated with each phase, material, or process, and the processes needed to convert those materials to useful products. The analysis includes the construction and assembly of these products into a structure, and the maintenance and operations necessary to maintain them. Finally, LCA quantifies measures to dispose of or recycle the assembly products at the end of their original life.

The EcoCalculator measures eight categories: energy consumption, material resources consumed in manufacture, potential contribution to global warming, potential for acidification, detrimental influence on human respiratory function, potential contribution to aquatic eutrophication, and potential depletion of ozone and contribution to smog.

The EcoCalculator for Assemblies clearly ranks among the more ingenious design tools to emerge for objectively comparing building product designs that affect non-renewable resources and our environment from their very beginning until the end of their useful life.

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