Copper in Architecture Handbook Keeps Pace with Technology

Copper is still called a handbook, although some in the building community might refer to it as “the Bible.” And it’s still available in printed form—something designers will need to order that way.

It’s an important imprimatur throughout the building community to materials and building practices, and also to chemical systems such as heating, air conditioning and water supply systems, including fire sprinkler systems—a critical component of commercial and institutional buildings, and increasingly, residential structures.

While various piping materials can be used for sprinkler systems, copper is often recommended, especially in systems or applications where the delivery of clean water from the system is desired to maintain water quality, or where the use of copper is desired in the building construction.

Copper also helps to eliminate the “prone to corrosion” problem of all metals used in buildings in general and sprinkler systems in particular. The life expectancy of copper components is virtually unlimited and a life cycle costing analysis and long life are key attributes that can be shared with facility management.

There are many other reasons why copper tube and fittings are ideal for fire sprinkler systems.

Fire Resistance—Unlike some piping materials, copper does not burn, support combustion or emit toxic fumes when exposed to flame. It will not transport fire through floors, walls and partitions and it will not increase water pressure when heated. Although fire temperatures can easily reach 1500°F, copper has a melting point of nearly 2100°F, making it impervious to even extreme heat.

Superior Flow—Preventing capacity loss is critical to maximizing a system’s effectiveness. Thinner-wall copper tubing offers superior flow rates compared to other, similar-size pipe materials. The oval flow that forms in the inner surface of copper tubing acts as a protective layer throughout the tubing, which allows the flow of water and reduces the potential that a system will clog.

Ease of Installation—From initial delivery of the sprinkler local, lightweight copper tubing helps get jobs done quickly. Copper is also light in weight, easy to cut and handle, unlike competing materials such as heavy steel pipe and fiberglass or plastics. Systems components with small-diameter copper tubing, which are typically copper plumbing components, result in less loss in building interiors. And because copper is fully recyclable, any copper components that must be replaced during the life of the building can be recycled and used again.

Cost and Cost-effectiveness—While initial construction costs may be higher, the longevity, durability and dependability of copper systems make them competitive and even lower in costs over the long run. Copper is also 100 percent recyclable, so additional costs can be recovered when a building is demolished or the system is replaced.

In today’s green building environment, copper offers many advantages, not least of which is its 100 percent recyclability. The copper itself is a metal that does not burn or emit toxic fumes when exposed to fire. Copper is also infinitely recyclable, and the recycled metal has the same properties as the original material. The same can be said of copper’s environmental benefits, including its ultra-low carbon footprint.

Ground-source heat pumps work by boosting below-ground temperatures, which average 50 to 60 degrees underground, to a higher, more suitable level for home heating. The systems also cool homes during warmer weather by returning ambient air down the same tubes.

In general, ground-source heat pumps are more efficient than systems that depend on above-ground energy. Ground-source systems use smaller conduits, which results in lower water travel time, and they also enable them to maintain membership in organizations such as the American Institute of Architects (AIA), and International Interior Design Association (IIADA).

What Would Al Gore Choose?

Nobel Environmentalist Goes Geothermal at Home

Competing products all make great claims and support the idea that copper products are the “greenest” of all metals used in buildings in general and sprinkler systems in particular. The handbook asserts that copper is highly regarded in interior design, as well. Architects need it. Installation contractors need it. We get calls for it all the time.”

The number of attendances varies depending on the size of the event,” Thompson says. “We go to the office so attendances don’t have to use any travel time, and we do it at no cost to the companies or the attendees.

Copper in Architecture

Diverse-Energy Systems

Heat Pump System

Copper tubing is supplied by Kellen Communications, Inc.

Full insulated material system

Copper Design Potential Highlights Architectural Seminars

Long lifespan, structural integrity and superior recyclability are all attributes that make copper products so useful in the architecture and construction industries. And increased awareness of copper demand from the increased recycling that is happening across the country can only enhance its use in this regard. As well, as design and construction practices.

Featured by Earth To Air Systems of nearby Franklin, MA, a green office building named after his home town.

Copper’s Design Potential

Highlights Architectural Seminars

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