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Message from the Owner

By Steven Forrester

DMA Engineering has been busy with a large scale commercial mechanical and electrical design as well as a residential heating and cooling system.

We are currently in the process of updating our company website and will roll out the new design and content mid-August.

DMA Engineering is excited about our in-house projects and is even more excited about working with you on future projects.

Clients in the Spotlight

Eagles Nest Early Learning Center

By Steven Forrester, PE

DMA Engineering completed the design of the mechanical and electrical systems of the addition to the Eagles Nest Early Learning Center located in Black Hawk, Colorado. DMA Engineering was contracted by Radiance Corporation to provide these design services. Mr. Jim Richmond of Radiance Corporation wanted to incorporate radiant floor, geothermal, solar thermal and solar photovoltaics into the addition to reduce the business' energy consumption and carbon footprint.

DMA Engineering designed the system to have a drain back solar thermal system providing domestic hot water and the first stage of the radiant floor for the new addition. The second stage of the radiant floor is a 3 ton ground source heat pump system using two 300 foot vertical boreholes. In the summer, the excess solar thermal energy is used to reheat the geothermal loop field. A 5 KW solar photovoltaic system was also designed taking advantage of the building's southern roof exposure. The addition is under construction and will be completed in the fall of 2009.

Building Systems

BENEFITS OF SYSTEM COMMISIONING

By Paul Lind, PE CEM

Simply put, Building Commissioning is a systematic and documented process of ensuring that the owner's operational needs are met, building systems perform efficiently, and building operators are properly trained. Think of it as quality assurance in the building industry. Besides reducing risk for new construction projects it is a comprehensive way to assess and tune up the performance of existing buildings. Retro-commissioning can cure problem areas such as high energy costs and poor comfort or indoor air quality.

The real goal is that the building operation be as trouble free as possible and that the building performs at an extremely energy-efficient level. New construction commissioning may include review and testing of HVAC, lighting, electrical, life safety and security. It ends with assuring that the operators are properly trained and that the O&M manuals are available and accurate. New construction commissioning activities follow the construction process from pre-design planning through design, construction and acceptance. The commissioning provider becomes an integral part of the building team.

Commissioning requires a whole-building, cross-disciplinary approach. The best commissioning plan in the world will not produce the desired results without experienced people to implement that plan. It is essential the commissioning provider be an objective, independent advocate of the building owner. DMA Engineers are well respected for their project management skills, including pro-active planning, comprehensive coordination, effective documentation, and focused quality assurance efforts. We will be pleased to discuss the commissioning of your specific project.

INSIDE THIS ISSUE

Clients in the Spotlight

Showcase Custom Home

By Steven Forrester, PE

Energy Solutions Network Inc. has contracted DMA Engineering to be the lead engineers and provide mechanical engineering design for a large custom home in the Denver metro area. The home will incorporate a multistage hydronic geothermal plant providing heating and cooling for the house, as well as the indoor and outdoor pools. The system will be able to provide radiant floor heating coupled with a forced air system. Per the owners desire they can be heating part of the home using the radiant floor system while providing cooling in another part. We anticipate this scenario when the owner is entertaining throughout the year.

We have coupled Energy Recovery Ventilators (ERV's) throughout to provide fresh air and keep the indoor air quality at a comfortable level.

We thrive on the engineering challenges of a complex building of this magnitude. We are bringing innovation to the project. It features radiant walls and ground tube heat exchangers to cool the wine cellar.

The project has many design professionals providing expertise in their respective fields, and we are seamlessly integrating DMA with this team to assure project success. We meet continually with the Architect to insure the mechanical system will not affect the aesthetics.

Hot Topic

Geothermal (Ground-Source) Heat Pumps:
Market Status, Barriers to Adoption, and Actions to Overcome Barriers
Prepared by Patrick J. Hughes

More effective stewardship of our resources contributes to the security, environmental sustainability, and economic well-being of the nation. Buildings present one of the best opportunities to economically reduce energy consumption and limit greenhouse gas (GHG) emissions.

Geothermal heat pumps (GHPs), sometimes called ground-source heat pumps, have been proven capable of producing large reductions in energy use and peak demand in buildings.

If the federal government set a goal for the U.S. buildings sector to use no more nonrenewable primary energy in 2030 than it did in 2008, based on previous analyses (updated and summarized in this report), it is estimated that 35 to 40 percent of this goal, or a savings of 3.4 to 3.9 quads * annually, could be achieved through aggressive deployment of GHPs.

GHPs could also avoid the need to build 91 to 105 GW ** of electricity generation capacity, or 42 to 48 percent of the 218 GW of net new capacity additions projected to be needed nationwide by 2030. In addition, $33 to $38 billion annually in reduced utility bills (at 2006 rates) could be achieved through aggressive deployment of GHPs.

Read the full article at:
www.zebralliance.com/docs/geothermal_report_12-08.pdf

* A quad is quadrillion(10^15) BTU
** A GW is 1,000,000-Kilowatts