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Mechanical Contractors Association MCAA of America

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New Technologies, Lessons and Marketing Opportunities in Water Conservation, Reuse and Recycling

Following is the text of an April 3, 2009, status report on this study, which is being conducted by Jerry Yudelson of Yudelson Associates.

Project Status: We are completing research on new water conservation products, systems and technologies from Australia, Israel and Western Europe, through both personal visits, interviews with key individuals (primary research) and secondary research in the water conservation literature. We expect to have a draft report ready in three months (by July 30, 2009), based on research to date and planned interviews with leading U.S. industry participants.

Actions Taken:

1. As proposed, Jerry attended the OzWater '09 conference of the Australian water industry in Melbourne, 15–18 March 2009, sat through a number of presentations, spent considerable time at the trade show and became acquainted with a number of industry leaders. Follow-up meetings with two engineering firms and the Australian Green Building Council were held in Sydney on 19–20 March 2009.
2. In January 2009, Jerry attended a presentation by the Australian Trade Commission in Los Angeles, focused on water problems and solutions in both Australia and California.
3. On March 29-30, Jerry attended the Water EC conference in Orange County, CA, sponsored by Water Efficiency magazine (www.waterefficiency.net), including a trade show and presentations on water issues in the U.S.
4. Jerry has contacted the U.S. consulates of Germany, France, Belgium, The Netherlands, the U.K., Israel, Denmark and Austria to get information on new water efficiency products and systems, to be incorporated into the report.
5. We have reached out to the specifier community and have scheduled interviews with plumbing engineers at Interface Engineering and Glumac, both based in Portland, Oregon. In addition, we will expand our reach in April and May by interviewing leading mechanical contractors with a green building commitment. We hope to interview members of the MCERF task force overseeing the research project as well and request the names of 2–3 such members.

Preliminary Observations:

1. It appears that there are a number of new approaches, some extensions of conventional practice and others ranging from mildly innovative to truly exotic, that will be coming into the plumbing industry in the next few years.
2. There is a developing water crisis throughout the Sunbelt of the U.S., ranging from severe drought and water shortages this year in California to continuing problems in

3. Georgia and Florida that will mandate both higher prices and new technology for the plumbing industry. Our final report will provide more detail on these external developments.
4. Low-flow fixtures are becoming a staple of the green building industry, ranging from water-free and ultra-low-flush urinals to dual-flush toilets and valves for water closets. Our final report will showcase some of these approaches.
5. Technologies for recycling rainwater and utilizing graywater are also becoming more common and more acceptable to code authorities. Our final report will have more up-to-date system descriptions and storage recommendations.
6. Further water conservation approaches for buildings include new federal EPA Water Sense labeled appliances to new ways to reduce cooling tower water use.
7. There is considerable development in metering technology, with the goal of sub-metering all water uses in buildings to encourage conservation responses.
8. The new LEED® 2009 system now has a prerequisite for 20 percent reductions from code in all LEED certified projects, which will spur new approaches to reducing water use at fixtures.
9. Water rates are going up in much of the U.S., providing greater economic incentive for conservation with new technologies. For example, wholesale water prices in Southern California are scheduled to more than double by 2013, compared with 2008. Additionally, more water agencies are adopting aggressive “tiered” rates to promote conservation. For example, in Tucson, Arizona, water rates rise from $1.23 per CCF for the first 15 CCF, to $4.52, nearly a fourfold increase, for all water use beyond 15 CCF per month.
10. Owing to continent-wide climate changes, Australia is in the worst drought in its recorded history (150 years), with some large cities at times having less than 30 days’ water supply on hand. As a result, Australia is probably the world’s leading laboratory for changes in water technology, including desalination of seawater, urine separation plumbing (for onsite treatment and reuse), and even “sewer mining,” the practice of taking sewage from the street, treating it and reusing it in buildings for toilet flushing, landscaping and cooling tower water makeup. Similar technology innovations are going to become more common throughout the Middle East as growing populations, urban development and green approaches start to have an impact on water demand and water technology.

Some Preliminary Findings and Conclusions:

1. There is plenty of momentum for new water conservation technology in both new and existing buildings, including sensor-based faucets; ultra-low-flow (1 pint per flush) and water-free urinals; dual-flush toilets and valves; and similar approaches to commercial laundries and food service.
2. Contractors can expect to see a lot more focus on rainwater harvesting systems in new and existing buildings, combined with dual piping to toilets and cooling towers.
3. Expect also to see focus on graywater reuse in a similar vein to rainwater harvesting, but in this case the graywater will be largely used for “outside the building” applications such as cooling towers and landscape irrigation.
4. There is a growing movement for onsite sewage treatment using both biological and mechanical (anaerobic) technology. The technology developments in micro-filtration and ultra-filtration are providing membranes capable of treating brackish and contaminated water streams more efficiently and economically.

5. Expect to see also cities become more aggressive with “purple pipe” technology of distributing treated wastewater to buildings, leading to further onsite treatment and/or direct use in cooling tower water makeup.
6. Rising water prices and severe drought conditions in much of the southern tier of the U.S. will also provide economic justification for technological changes, aided by such green building certifications as the new 2009 versions of LEED for New Construction and LEED for Existing Buildings Operations and Maintenance that mandate 20 percent water use reduction versus current codes.

Research Plan for the Next Two Months:

1. Conduct interviews with at least 15 water professionals, including technology providers, plumbing engineers, water authority personnel, mechanical contractors and other experts on new water technologies.
2. Identify systems, products and technologies new to the U.S. that are likely to hit the market in the next 18 to 36 months, including key drivers of expansion, barriers to growth, providers of products and systems, and economic benefits.
3. Identify systems, products and technologies currently introduced into the U.S. green building and water conservation market that are poised for major market growth in the same 18 to 36 month time frame, including key drivers of expansion, barriers to growth, providers of products and systems, and economic benefits.

For additional information about this or any of MCERF’s studies, please contact Dennis Langley.