

We're excited about the progress UTD has achieved on several fronts. Below is a summary depicting our available products and resources, projects that have accomplished significant milestones, and new awards which help leverage UTD member funds. If you have any questions regarding this report or it's content, please give us a call.



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Greg Maxfield
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Our members serve over 20 million natural gas consumers in North America. Together we are shaping the energy future with new efficient end-use technologies.

Products Commercially Available or Being Readied for Commercialization



> **Transport Membrane Condenser (TMC) Technology**

An advanced heat-and-water recovery system, including TMC technology, was installed and commissioned at Baxter Healthcare in Thousand Oaks, CA, meeting performance expectations and increasing the boiler efficiency from 80% to 93% – saving the customer 15% on fuel bills, reducing greenhouse emissions by 15%, and saving over 250,000 gallons of water. The Ultramizer® system is available from Cannon Boiler Works, Inc.

Chris Giron

*Cannon Boiler Works
724-335-8541 x414
sales@cannonboilerworks.com
www.cannonboilerworks.com*



> **Low-Oil-Volume Fryers**

A new commercial foodservice low-oil-volume fryer has undergone development and pre-commercial testing with successful results. The fryer, marketed by Frymaster as Protector® fryers, increases energy efficiency while also extending cooking-oil quality and life to provide significant customer savings.

Linda Brugler

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> **Equinox Solar-Assisted Heating System**

The Equinox system is a combination thermal storage tank and instantaneous water heater capable of providing 100% of domestic hot-water and space heating needs. A staple in European and Australian markets, the technology has been made available in the U.S. through the efforts of Gas Technology Institute and Solar Usage Now, LLC. The technology – marketed as S.U.N. Equinox Heating Systems® – is one of the most energy-efficient systems available for residential and commercial applications.

Tom Rieker

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> **RASERT Technology**

The Reverse-Annulus Single-Ended Radiant Tube (RASERT) technology increases productivity, raises thermal efficiency, and decreases NO_x emissions for industrial heat treating and other indirect heating applications.

Dennis Quinn

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> **Stellar Countertop Steamer**

This compact gas-fired countertop steamer for commercial food service offers enhanced cooking rates while providing users with added savings of energy and water consumption. The unit was the first gas-fired boilerless steamer with an ENERGY STAR rating.

**Market Forge Industries/
Stellar Steam**

617-387-4100
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custserv@mfi.com
www.mfi.com
www.stellarsteam.com



> **Avantec Combi-Oven**

The combination oven uses a patented technology for improving cooking performance, quality, and efficiency. Able to operate in various cooking modes, the oven provides enhanced uniformity when compared to similar-sized ovens.

Dave Goble

Avantec Food Service Equipment
800-322-4374
dave@twomarket.com
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> **Cummins 8.9L Ultra-Low Emissions Engine**

This is the first engine certified to the highly stringent California 2010 standards for heavy-duty vehicle engines—achieving emission levels below the 0.2 g NO_x/hp-hr requirement while also retaining high shaft efficiency. Since commercial introduction in 2007, the engine has been widely used in the United States (with 2010 sales of approximately 10,000 units) and throughout the world in transit, refuse-collection, and regional hauling applications.

Scott Baker

Cummins Westport Inc.
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> **FuelMaker's Phill**

A field demonstration program was conducted to assess the performance, reliability, and economics of a natural-gas-fueling system that allows for the refueling of natural gas vehicles at homes and businesses. Six units were installed and monitored for one year. Data was analyzed and a user survey was conducted at the conclusion of the demonstration. Performance met or exceeded the manufacturer's specification and users' attitudes were very positive.

Paula Hebert

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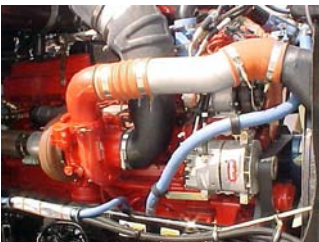


> **NovelAire ComfortDry™ 400**

This advanced space-conditioning system was developed for residential and light-commercial buildings where humidity or allergen concerns prevail. Research provided enhanced operation and reduced cost, weight, size, and installation requirements.

Scott Janke

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> **Westport HPDI NGV Fuel System**

High-Pressure, Direct-Injection (HPDI) technology enables engines designed for diesel combustion to operate with natural gas while retaining the same critical performance features of high torque, power, and fuel economy of a traditional diesel engine. A 2010 demonstration of the Westport HD-powered tractor allowed fleets to obtain first-hand experience with the new technology. Feedback was very positive and resulted in one company ordering 48 Westport HD-powered tractors.

Stephen Ptucha

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Significant Milestones



> FlexCHP High Efficiency Ultra-Clean Power and Steam Package

Researchers are developing a cost-effective supplemental burner, integrated with a gas-turbine based combined heat-and-power system, that can significantly increase energy efficiency while meeting stringent air emissions regulations. Laboratory tests have shown total efficiency of over 85% and NO_x emissions that are below stringent California emission levels. Field testing is planned at a food-processing plant in California.

Dave Cygan

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> Solar-Assisted Natural Gas Energy Systems

Researchers foresee significant efficiency improvements in several applications by combining higher-temperature solar-related technologies with natural-gas-fired equipment. Progress continues with the installation of solar thermal collectors using B2U Solar's External Compound Parabolic Concentrator (XCPC) technology at Gas Technology Institute. Additional testing is planned with SABMiller at its Los Angeles area brewery.

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> Wok Burner

A new commercial foodservice wok-burner range system – developed in cooperation with a major Asian restaurant chain – increases efficiency 100% (compared to current products) while enhancing kitchen comfort by lowering ambient temperatures. Activities are under way to license the wok technology to a manufacturing partner and build a prototype unit for a sponsor test site.

Frank Johnson

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Cummins Westport (CWI) High-Horsepower NGV Engine

CWI, with UTD support, is developing a new 400-HP NGV engine for the large truck and bus market segment that includes regional haulers, refuse transfer trucks, and other larger vehicles. The new engine will satisfy the stringent California emission requirements. An alpha engine is undergoing field testing and the new engine is expected to be available in 2012.

Scott Baker

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Analytical Tools & Information Products

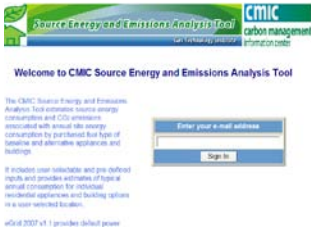


> Venting Solutions

VENT-II, the industry standard software program for vent system design, offers application with commonly used desktop operating systems and spreadsheet tools. A venting Technical Advisors Group includes 30 subject matter experts, manufacturers, industry groups and associations, and GTI.

Larry Brand

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> **Source Energy and Emissions Analysis Tool**

The Source Energy and Emissions Analysis Tool (SEEAT) allows calculation of the energy source and greenhouse-gas emissions related to point-of-use (site) energy consumption by fuel type for each energy consuming device (e.g., appliances and vehicles). SEEAT includes a source-energy and carbon-emission calculation methodology that accounts for primary energy consumption and related emissions for the full fuel cycle (extraction, processing, transportation, conversion, distribution, and consumption of energy) for residential and commercial buildings, industrial applications, and light-duty vehicles. (Available online at www.cmictools.com.)

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> **International Green Construction Code (IGCC)**

Based on the technical merits and societal benefits of source energy presented at code-development and hearing-committee meetings and conference calls, the International Green Construction Code (IGCC) development committee shifted from site energy to source energy and greenhouse-gas (GHG) emissions as the basis of the performance requirements in IGCC PV 1.0. The PV 2.0 hearing committee also approved a critical technical comment shifting to a single-reference building approach that will implement the source energy and GHG emission compliance requirements consistently and equitably. IGCC is scheduled to be published by the International Code Council as a model code in March 2012.

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> **Whole House Residential Energy Efficiency Wizard (REEW)**

The REEW provides UTD members and their customers with a user-friendly Internet-server-based tool allowing for the analysis and easy selection of the latest technologies applicable to residential building energy efficiency measures customized to a specific member service territory.

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> **Commercial Green Building Analyzer (CGBA)**

A Beta version of the CGBA, an Internet-server-based tool, has completed testing. The CGBA is designed to be a user-friendly tool allowing for easy selection of the latest applicable commercial "green" building energy efficiency measures customized to a specific member service territory.

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Select New Cofunding and Leveraged Funding Sources

- > GTI signed a contract with the California Energy Commission for a new \$2 million program focused on technology development for the commercial foodservice market. Restaurants and institutional foodservice represents a major natural gas energy user. This program will develop a suite of higher-efficiency natural gas appliances for commercial kitchens. The program compliments the Conveyor Oven, Convection Oven and Commercial Range UTD projects.
- > Under a contract with the U.S. Department of Energy Building America Program, GTI will address retrofit whole house, energy efficiency, and related building efficiency initiatives.
- > Field testing of two new solarthermal systems, one at a winery in California and the other with a brewery operation in California, are being funded by the California Energy Commission.
- > Southern California Air Quality Management District awarded GTI a \$450,000 contract to address the development and testing of low NO_x emission home furnaces and space heating equipment to comply with future emission requirements.
- > GTI was awarded a \$1.8 million contract from the CEC for the demonstration of the planned Cummins 12 L natural gas vehicle (NGV) engine.