Written by Staff
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DuPont Photovoltaic Solutions and Applied Materials, Inc., have announced a collaboration to advance a printing technology that is expected to increase the absolute efficiency of crystalline silicon (c-Si) photovoltaic (PV) solar cells. By increasing the efficiency and yield of solar cells and modules, PV power can become more cost effective versus other forms of energy. The collaboration reflects DuPont's recently announced commitment to focus on meeting four emerging global trends, one of which is decreasing dependence on fossil fuels.

In current solar-cell manufacturing processes, photovoltaic metallization pastes are screen printed onto the cell surface in a pattern of grid lines which collect electricity produced by the cell and transport it out. To maximize efficiency in the solar cell, the multiple printing technology will reduce the shadowing effect of wide grid lines on solar cells and improve electrical conductivity.

Use of Applied Materials' Baccini Esatto Technology™ and Solamet® photovoltaic metallization pastes from DuPont enable narrower and taller grid lines to be precisely printed in two or more layers, according to the companies. In addition to demanding precise alignment of the patterning system, multiple printing requires the paste to be finely tuned to perform consistently during all printing passes.

Applied Materials, Inc., Santa Clara, CA, creates software used in the manufacture of semiconductor chips, flat panels, solar photovoltaic cells, flexible electronics and energy-efficient glass. DuPont Solamet is part of a portfolio of products represented by DuPont Photovoltaic Solutions, which links various DuPont global operations to support growth in the photovoltaic industry.

**DuPont Photovoltaic Solutions**
**Wilmington, DE**

**For more info, enter 30 at www.MT-freeinfo.com**

**Heat-Recovery And Pollution-Control Technologies**

Thermal Energy's FLU-ACE® combined heat recovery and air pollution control technologies have been developed and proven over 17 years of design/build experience in a variety of industrial, commercial and institutional applications. FLU-ACE recycles 15% to 50% of the heat energy from hot waste gas or industrial process exhaust gas streams while at the same time removing multiple pollutants, including fine particulates; hydrocarbons and toxic VOCs; acid gas and greenhouse gas. This versatile product line makes it adaptable to most hot-waste gas exhaust streams. For example, the standard FLU-ACE has been installed as a replacement technology for a conventional smoke stack or chimney in industrial and institutional central heating/power plants, and for combined heat recovery and air pollutant control from hot gases emitted from burning natural gas and fuel oils. In these applications, the product recovered up to 90% of the waste heat, which translated into fuel savings ranging from 15% to 50%, while at the same time removing from 90% to 99% of a wide variety of air pollutants.

**Thermal Energy International, Inc.**
**Ottawa, Ontario, Canada**

**For more info, enter 31 at www.MT-freeinfo.com**

**Gas-Turbine Updates To Improve Output, Efficiency**

Using next-generation gas-turbine technology to increase output and efficiency, GE Energy has introduced its upgraded Frame 7FA gas turbine to meet growing performance requirements for power plant operators. The upgraded turbine, which will not be available until 2012, is designed to help power plant operators reduce their total cost of ownership and environmental impact by allowing them to use less fuel to generate power.

The power output of the new 7FA will increase to 211 MW in simple-cycle operation, a 36 MW increase over the previous version of the 7FA. In combined-cycle configuration (two gas turbines and one steam turbine), the power output will increase to 627 MW, a 98 MW increase in power generation. GE also increased the efficiency in each configuration: Thermal efficiency will increase to 38.5% in simple-cycle operation, and to 57.5% in combined-cycle operation. Each point of efficiency increase translates to savings in fuel costs for each megawatt of power produced.

**GE Energy**
**Greenville, SC**

**For more info, enter 32 at www.MT-freeinfo.com**

**Sewage Plant Uses Waste Heat To Create Electricity**

A new system in use at the Greater New Haven Water Pollution Control Authority (GNHWPCA) uses waste heat from a sewage-treatment facility to produce steam, which is used to power a 750 kW steam turbine generator at a nearby water-pollution abatement facility. Designed by Dresser-Rand Co., the system is expected to produce 4.4 million kW hours of electricity per year, helping GNHWPCA reduce its electricity costs by one-third.

The GNHWPCA water treatment process involves removing sludge, or sewer system waste, from the water, reducing the moisture content to a combustible level, and burning the dried sludge in a multiple-hearth furnace. The resulting exhaust gas is scrubbed to remove pollutants and then released to the atmosphere. The waste-heat recovery solution routes the exhaust gas directly from the furnace to a waste-heat boiler, creating steam. The steam powers the turbine generator set, producing electricity in a closed loop cycle. The exhaust gas is returned from the boiler to the scrubber and out the exhaust stack. The process is designed so that it does not change emissions and, therefore, does not impact the facility's air-quality permit. The system simply diverts the gas upstream of the scrubber, extracts a significant amount of the otherwise wasted heat and returns the gas back to the scrubber to continue its normal exhaust path.

In an industry release, Dresser-Rand said the New Haven project exemplified the company's turnkey approach to project delivery, and that the same type of system would be viable in as many as 200 similar facilities in the United States. The New Haven project is the company's first complete service installation at a sludge incineration facility.

**Dresser-Rand Co.**
**Houston, TX**

**For more info, enter 33 at www.MT-freeinfo.com**

**Refrigeration Manufacturer Receives EPA 'GreenChill' Award**

Hill PHOENIX, a manufacturer of commercial refrigeration equipment, has received a 2008-2009 GreenChill Advanced Refrigeration Partnership "Distinguished Partner Award" from the U.S. Environmental Protection Agency (EPA). The Georgia-based company was recognized for its advanced refrigeration technology, including compact chillers and secondary loop systems that reduce ozone-depleting and greenhouse-gas refrigerant emissions. Four supermarket chains also received this EPA award, that was presented at a recent food-industry trade show in San Francisco.

The GreenChill Advanced Refrigeration Partnership is an EPA initiative in which refrigeration equipment manufacturers and participating supermarkets work together to help reduce refrigerant leaks and potentially damaging emissions. Hill PHOENIX is a founding GreenChill member. EPA estimates that if every supermarket in the nation reduced its emissions to the current GreenChill average, the nation could save the equivalent of 22 million metric tons of carbon dioxide and 240 ozone-depleting tons every year, while saving $108 million in refrigerant expenses annually. Between 2007 and 2008, GreenChill's founding food-retail partners reduced their aggregated total corporate emissions rate by 8.5%.

While most of GreenChill's 46 partners are supermarket chains, nine are makers of refrigeration equipment and fluids. In addition to Hill PHOENIX, they include Hussman, Zero Zone, Honeywell, Arkema, DuPont, Dow and others.

**Hill Phoenix, Inc.**
**Conyers, GA**

**For more info, enter 34 at www.MT-freeinfo.com**

**Manufacturers Say R&D Tax Cut Vital To U.S. Energy Gains**

More than 400 manufacturers and business organizations from across the United States urged Congress last month to approve legislation to strengthen and make permanent the R&D tax credit before it expires on December 31, 2009. In a letter sent to each member of the U.S. Congress, the companies wrote that not only does research and development across industry sectors make it possible to create good jobs, it is critical for the investments the country must make in renewable energy, energy-efficiency technology, manufacturing processes, and other areas.

Earlier this year, President Obama said that the R&D Credit “returns $2 to the economy for every dollar we spend,” and has called for the credit to be made permanent. Created by Congress in 1981, the R&D Credit spurs the creation of U.S.-based innovation and economic activity, and is credited for fostering private-sector R&D investment by companies of all sizes. Companies and organizations signing the letter to Congress represent virtually every industry sector from manufacturing, health care, energy, technology, pharmaceuticals, telecommunications, aerospace, agriculture, biotechnology and more.