

Tax Deductions for HVAC Efficiency

BY CHARLES GOULDING, JACOB GOLDMAN AND KENNETH WOOD

Facility managers are finally starting to get it. All over the country, they are taking advantage of Energy Policy Act (EPAct) tax deductions of \$0.60 to \$1.80 per square foot to support energy efficient HVAC installations. The sudden large increase in projects qualifying for HVAC tax deductions is occurring for several reasons. For one, facility managers and tax advisers are getting better at identifying qualifying projects. Also, HVAC equipment is getting substantially more energy efficient. Finally, building energy modeling is being used in more new building and HVAC projects.

The deductions — established under EPAct Section 179(D) of the Internal Revenue Code — are designed to encourage energy efficiency

and for deductions that it is possible to identify types of projects that most often achieve deductions. Other HVAC projects may also qualify for deductions, but most so far fall into one of three categories:

1. Installation of one or more of 11 categories of HVAC equipment. Although Section 179(D) deductions are not limited to specific types of HVAC equipment, and any HVAC project that meets the criteria spelled out in Section 179(D) would qualify for a deduction, most deductions to date have been for the following types of projects:

- Geothermal (ground source heat pumps)
- Thermal storage
- High-efficiency package terminal air conditioning (PTAC) units in apartments and hotels
- Centralized HVAC in apartments and hotels
- Energy recovery ventilation
- Demand control ventilation
- Chillers in buildings of less than 150,000 square feet
- Very efficient heaters in warehouse, industrial and other spaces with no air conditioning
- VAV devices in buildings of less than 75,000 square feet
- Chilled beam ceilings
- Magnetic bearing chillers

2. Installation of any further energy-reducing HVAC equipment in a building that already meets Section 179(D) criteria of energy costs that are at least 16.67 percent lower than a building designed to meet ASHRAE 90.1-2001. Buildings that already use one of the 11 HVAC equipment categories generally meet that criterion.

3. Combining energy-efficient lighting with energy-efficient heaters in non-conditioned spaces and combining LED lighting in conditioned spaces.

Section 179(D) deductions are ob-



For links to supplier
Web sites go to

WWW.FACILITIESNET.COM/BOM

in upgrades to existing buildings and new construction. The maximum deduction is \$1.80 per square foot. To qualify, a building must reduce overall energy costs by 50 percent compared to a building designed to meet the 2001 version of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standard 90.1. If a project doesn't reduce energy costs enough to qualify for that deduction, there are deductions of up to \$0.60 per square foot each for lighting, HVAC and the building envelope. Government buildings, which don't pay taxes, may transfer tax deductions to project designers.

To qualify for a deduction, an HVAC project must reduce energy costs at least 16.67 percent below the costs for a building designed to meet ASHRAE 90.1-2001. The project must use energy modeling to show the energy cost savings.

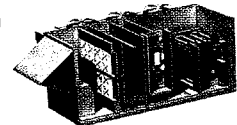
Enough HVAC projects have quali-

CARRIER CORP The Gemini Select split system units are more efficient than previous models and 10 percent more efficient than ASHRAE 90.1 standard at both full and part loads. R-410A refrigerant used in the full range of 25 to 100 ton units. **Circle #213**

GREENHECK Model MPX

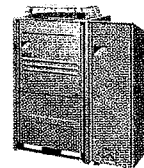
package DX system is appropriate for areas where energy recovery is not permitted. Provides

100 percent make-up air with a DX cooling system to provide 7 to 30 nominal tons of cooling and up to 10,000 cfm airflow. Uses R-410a refrigerant. **Circle #210**



MCQUAY Maverick II commercial rooftop systems in 15 to 75 ton capacities feature integrated compressor and reheat control that automatically energizes the reheat whenever dehumidification is needed and micro-channel coils for more Btu per square foot of coil. **Circle #211**

DAIKIN AC The VRV III-C performs at outdoor temperatures as low as -13° F. At -4° F, the system will maintain 84 percent of its nominal capacity, a first in the VRF segment, according to the company. Heat-up time of 6 minutes at 14° F. **Circle #212**



WATERFURNACE Versatec Ultra water source heat pump for water loop and geothermal applications has a 17.2 EER and a 3.5 coefficient of performance. Available from 9,000 to 70,000 Btu/h output. Features single capacity rotary or scroll compressors paired with PSC blower motors. **Circle #214**

GOODWAY The GDS-15-PH Scale Removal System uses an integrated chemical pump to draw directly from the container, circulates the chemical and water, and automatically evaluates the pH level as the scale breaks down and injects additional chemical as needed. **Circle #215**

YASKAWA ELECTRIC AMERICA

The E7S Slim Configured Package can accommodate several common options, such as circuit breakers, filters, reactors, etc. An input disconnect is standard. Ratings include: 208V, 3 phase, 1 to 40 HP and 480V, 3 phase, 1 to 100 HP. **Circle #216**



tained for reductions in energy costs and those costs are based on a building designed to meet ASHRAE 90.1-2001. For example, installing a chiller in a building of less than 150,000 square feet typically qualifies for a deduction because the ASHRAE 90.1-2001 reference building will include a less efficient HVAC package unit. The same goes for geothermal systems.

Thermal storage systems often qualify because they take advantage of time-of-day pricing. These systems produce ice or chilled water at night, when electric rates are lower, and use it to cool the building during the day. The difference between nighttime and daytime rates is usually significant enough to generate energy cost savings for the deduction.

Buildings connected to district cooling systems that use thermal storage may qualify for "free-riding" Section 179(D) deductions for HVAC, lighting or building envelope upgrades.

There may be other tax benefits available for energy-efficient projects. For example, there is a 10 percent geothermal

ATLAS SALES & RENTALS KwiKool model KPO portable air conditioners deliver 12 tons of cooling capacity and fit through a standard door. Measure 32-inches wide by 64-inches deep by 62-inches high. **Circle #217**

MOVINCOOL The CM25 provides 25,000 Btuh of cooling, high sensible cooling capacity, a 14 SEER rating, a variable-speed inverter compressor and inverter fan motors.



Measures 20 inches tall and has a built-in mounting bracket, flanges and vibration isolators for installation above a drop ceiling. **Circle #218**

STERIL-AIRE, INC. UVC kit for Air Handlers destroys microorganisms including flu viruses, bacteria and mold. Designed to install easily in fan coil units, unit ventilator systems and indoor air handlers with coils up to 84 inches with dual access. **Circle #219**

JOHNSON CONTROLS YORK model YCWL water-cooled scroll chillers now include models ranging from 50 to 200 tons of refrigeration (175 to 700 kW). The chillers can achieve an EER as high as 16.2 at full load and 24.5 at part load conditions. **Circle #220**

CES GROUP The CES Group Steam Grid multi-tube steam dispersion system installs within the humidification section of an air handler to distribute steam over the entire surface of the air handler section, reducing the absorption distance. Can be used as a short absorption distributor in pressurized or atmospheric steam applications. **Circle #221**

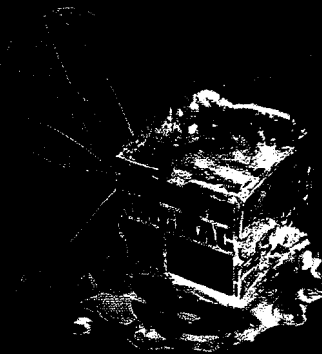
BIG ASS FANS The 12- to 20-foot diameter Element fan is driven by an oil-free, permanent magnet prime mover for maximum sound levels of less than 40 dBA. One 12-foot diameter fan covers 36 times the area of a 52-inch ceiling fan. **Circle #222**

FULTON The Invictus gas absorption heat pump is natural gas- or propane-fired and is incorporated and piped into a traditional hydronic heating system alongside either condensing or non-condensing boilers. Features inputs of 95,500 Btuh and outputs of 135,000 Btuh. **Circle #223**

AAF INTERNATIONAL The MEGAcel I Filter with high-efficiency ePTFE media offers a lower initial pressure drop than conventional micro-fiberglass media, according to the company. The filter uses tapered aluminum separators for pleat pack resistance and is resistant to corrosive environments. **Circle #224**

You can use ice to store energy
from wind turbines?
Now that's cool!

IceBank[®]
Energy Storage



Save money. Save energy. Conserve resources.

www.CALMAC.com

RHEEM Package Gas Electric and Package

Air Conditioners available in 3-5 tons, 6-12 tons, and 15-25 tons include a new microprocessor-based control board reporting on 76 different conditions. Can be compatible with BAS using BACnet and LONworks protocol. **Circle #225**

TESTO Pocket PROs are available in 10 different models for measuring air flow, (IR) temperature, humidity, pressure-flow, absolute pressure, material moisture, light and rpm. Features a wrist strap, belt clip, bright backlit display, auto-off function and protective cover. **Circle #226**

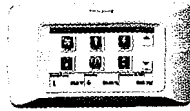
MODINE Operating at 93 percent efficiency, the six Effinity⁹³ models range from 135,000 to 310,000 BTU/hr. High-grade stainless steel secondary heat exchanger withstands acidic condensate. Can be vented as either a two-pipe or concentric vent system. **Circle #227**

CAMBRIDGE ENGINEERING INC.

M-series make-up air heaters are available in up to 75,000 CFM and 8,000 MBH capacity. Natural gas, LP gas or propane air burners. Available with variable frequency drive control, DX or chilled water coils and evaporative cooling options. **Circle #234**

HONEYWELL INTERNATIONAL

With the Reveal touchscreen display users can monitor and control a site's comfort levels, including heating, ventilation and air conditioning. Up to three data points for continuous display monitor live data, such as inside temperature, outside temperature and humidity levels. **Circle #229**



mitsubishi electric cooling and heating solutions

Split-ductless P-Series models A30/A36 models feature H2i (hyper-heating) to provide heating down to minus 13° F, operating at 75 percent of rated heating capacity at that temperature. Also feature increased-moisture removal and improved heating seasonal performance factor. **Circle #230**

DATA AIRE EC fan systems in heat exchangers use a permanent poled DC motor that has higher efficiencies at partial load. Feature onboard speed control and modulating fans, which provides noise reduction. Rated for both 50 and 60 Hz. **Circle #231**

tax credit or an equivalent 10 percent cash credit in lieu of the tax credit. The cash credit is only available for geothermal projects that commence by Dec. 31, 2010. In addition to the credit or cash grant, a geothermal project will also be eligible for accelerated 5 year MACRS tax depreciation and additional bonus tax depreciation in tax years where bonus depreciation is available.

Facility managers who have already achieved the 16.67 percent HVAC energy cost reduction — possibly by installing any of the 11 technologies — should be aware of a concept known as “free riding.” If a building has already attained the required energy cost reduction, any further HVAC equipment installation that reduces energy costs will trigger the HVAC tax deductions. Accordingly, any building that already has very efficient HVAC should give strong consideration to further HVAC upgrades by Dec. 31, 2013, when deductions are currently set to expire.

One common free riding project is to upgrade building controls. Consider

KEEPING YOU IN CONTROL WITH TRANE RENTAL SERVICES.

Loss of temperature control and power can lead to a disruptive work environment and unhappy tenants.

Trane Rental Services can make sure that your facility continues to provide the comfortable environment your associates and tenants expect. With equipment depots located in many major cities across the Americas, local service

providers, and 24/7 corporate support, Trane Rental Services is your go to resource for:

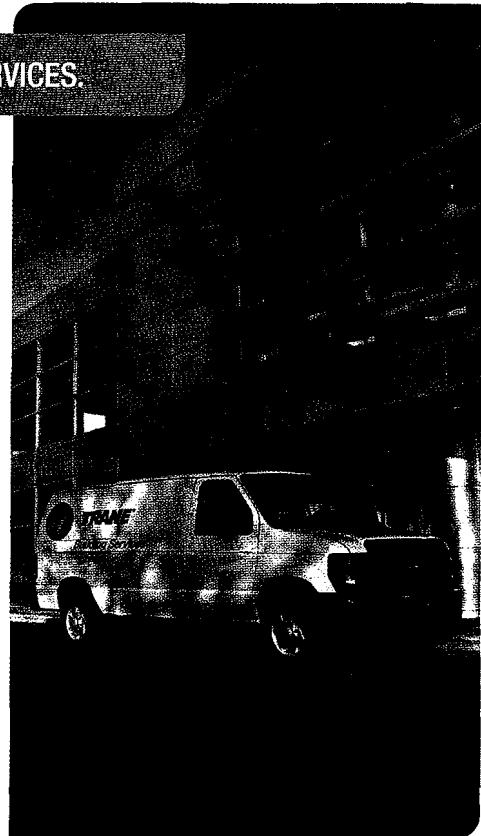
- Emergencies
- Seasonal capacity needs
- Planned service work
- Facility expansions & renovations
- Specialty events
- Disaster contingency planning

We provide the following rental equipment:

- Chillers
- AC units
- Cooling towers
- Air handlers
- Power generators
- Electrical cable
- Transformers
- Heaters



Call us at 1-800-755-5115 or visit us at www.trane.com/rentalservices



© 2010 Trane. All rights reserved.

a hypothetical 149,999-square-foot building that has had a chiller installed recently. It is often the case that a building like that meets the Section 179(D) criteria of having energy costs 16.67 percent lower than the costs of a building designed to ASHRAE 90.1-2001. If that's the case, the building might well qualify for a \$270,000 tax deduction for upgrading its HVAC controls.

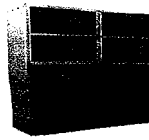
Energy Modeling Gains

To get Section 179(D) tax deductions for HVAC projects, the energy cost reduction must be documented by an energy simulation model using software approved by the Internal Revenue Service. That requirement was a significant obstacle when EPA's Act initially became law in 2005. But the past several years have seen changes that make modeling much less daunting than in the past.

For one thing, LEED also requires modeling. The growing popularity of that program means that more projects are using modeling. However, be aware that modeling for Section 179(D) re-

CLIMATE MASTER

Tranquility Large Vertical 7- to 25-ton heat pumps offer multiple cabinet configurations, use HFC-410A refrigerant and are suited for geothermal ground loop or ground water applications as well as water-loop, thermal energy transfer (boiler-tower) applications. Feature microprocessor controls and a TXV refrigerant metering device. **Circle #232**



RINNAI The RC98HPE 9.8 gallons per minute condensing tankless water heater for outdoor applications has a .93 energy factor with a temperature range of 98 to 185 degrees. 199,000 Max BTUs, available in natural gas or propane. **Circle #233**

CALMAC Icebank thermal-energy storage tanks use a spiral-wound, polyethylene-tube heat exchanger surrounded with water. Can be used in both a full- or partial-load off-peak cooling system. Available from 45 to over 500 ton-hours. No moving parts. **Circle #228**

UNIVERSAL HINGE The company's bolt-on hinge provides access to chiller condenser tubes for cleaning and does not require any welding. Suitable for either left- or right-hand applications as well as a variety of condenser cover shapes. **Circle #235**

SIEMENS INDUSTRY INC.

The Q-Series Duct Relative Humidity and Relative Humidity & Temperature Sensors monitor and transmit changes in humidity and temperature to the building control systems. Several models are available for humidity only, humidity and temperature sensing, and display versions. **Circle #236**

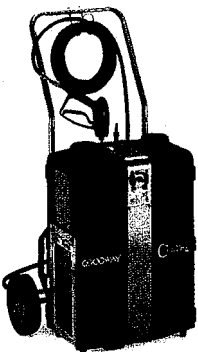
QUIETSIDE The Samsung Free Joint Multi allows 2, 3 or 4 zones to be connected to a single outdoor unit. Compatible with both the Neo Forte High Wall or Slim Duct series indoor units with total capacities ranging from 18,000 to 36,000 Btu. **Circle #237**

BALTIMORE AIR COIL The Easy Connect single inlet connection for the company's Series 3000 cooling towers simplifies water inlet piping and automatically balances the flow to the hot water basins. Located on the side or bottom of each unit. **Circle #238**

ABB AUTOMATION The ACH550 drive for HVAC applications is an adjustable frequency AC drive. Offers three modes of motor control: V/Hz, Sensorless Vector and Flux Vector. Performs speed and torque control of any standard squirrel cage motor. **Circle #239**

ALL THE CLEAN WITHOUT THE MEAN.

The Goodway CoilPro deep-cleans coils anywhere, quickly and safely.



CC-140 Portable & rechargeable for demanding conditions.

Forget harsh chemicals, cheap pressure washers and lugging heavy hoses. The portable, rechargeable CoilPro® safely power cleans coils from both sides. Simply foam up with biodegradable, non-acidic CoilShine® and power-rinse with 140 PSI clean water. Clean the better way. Clean the Goodway.

Get the right answer, right now!

888 364-3445

THE BEST WAY IS

www.goodway.com/coilcleaning

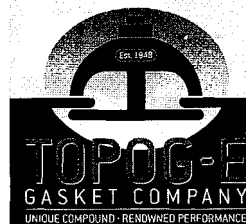


It's what your boiler would choose...

Visit www.topog-e.com to learn more about the world's most popular molded rubber handhole and manway gaskets.

Contact us to receive **FREE:**

- STEAM TEMPERATURE SLIDE RULE
- TECHNICAL SPECIFICATION AND USAGE GUIDE
- SAMPLE GASKET
- CONTACT DETAILS FOR YOUR LOCAL DISTRIBUTOR



For further information and a quotation:

1224 North Utica · Tulsa · Oklahoma 74110

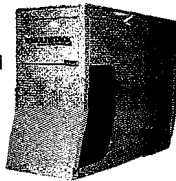
(800) 587 7123

tel 918 587 6649 · fax 918 587 6961
sales@topog-e.com · www.topog-e.com

MULTISTACK The MS165X tandem compressor, dual-circuit scroll chiller has four compressors on one frame. Tandem compressors on each circuit provides four-steps of unloading per module on a common heat exchanger. Offered in 135- and 105-ton

configurations. **Circle**

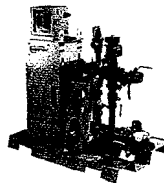
#240



EMERGENCY RENTAL SERVICES

A variety of emergency rental equipment is available from the company, including air-cooled water chillers up to 500 tons, 10,000 and 25,000 cfm air handling units and skid mounted pumps. **Circle #241**

AERCO The SmartPlate line of water-to-water heaters uses brazed plate to reduce energy consumption, and plate and frame designs for use with high-efficiency condensing boilers. The fully packaged, instantaneous heaters incorporate real-time load tracking capabilities and support up to 90 gpm loads. **Circle #242**



quires a different approach than LEED modeling. To get the deduction, ensure that engineers doing the modeling understand Section 179(D) requirements.

Another change is that undergraduate architecture and engineering students are now learning how to prepare energy models. That pool of expertise has made modeling more readily accessible.

A third factor is an increase in the number of IRS-approved modeling programs. Currently, the list includes: EQUEST; Trane Trace 700; Energy Plus; Carrier HAP; VisualDOE; EnergyGauge; DOE2.2; DOE2.1E; DOE2.1E-JJH; Owens Corning Commercial Energy Calculator; Green Building Studio; EnerSim; and IES (Virtual Environments).

Finally, many utilities will pay all or a portion of modeling costs. These reimbursements require approval before a project begins. If a project includes daylighting, it is essential to ensure that the model can accurately simulate the large energy savings daylight can provide.

One obstacle to wider use of Section

179(D) tax deductions is that most facility managers are unfamiliar with tax laws, while corporate finance departments usually know little about HVAC, lighting or the building envelope. Facility managers considering energy efficiency projects would do well to involve their finance departments in planning. There are also independent firms that specialize in the tax deductions for energy efficiency projects.

The energy savings available from highly energy efficient HVAC measures greatly reduce building operating costs. The opportunity for substantial HVAC Section 179(D) tax savings encourages facility managers to accelerate the purchase of this energy saving equipment. **BOM**

Charles Goulding (charles.goulding@energytaxsavers.com), attorney/CPA, is the president of Energy Tax Savers, Inc. Jacob Goldman is an engineer and tax consultant with the firm. Kenneth Wood is an analyst with the firm.

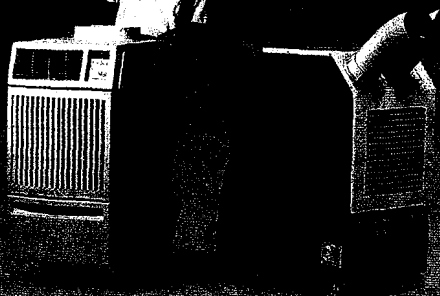
E-mail comments and questions to edward.sullivan@tradeexpress.com.

For more about EPAAct tax deductions for HVAC, go to: WWW.FACILITIESNET.COM/11629BOM



Need Portable Cooling?

Call the Specialists



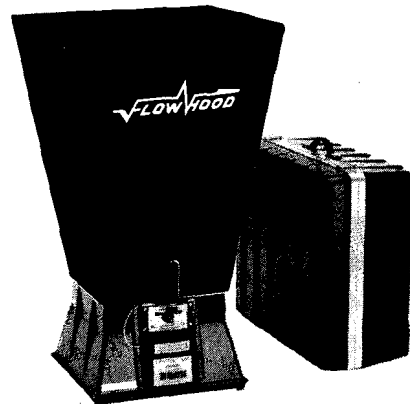
Rentals and Sales
Locations Nationwide
Primary, Supplemental, or Emergency Cooling

Atlas Sales & Rentals, Inc.
THE PORTABLE COOLING & HEATING SPECIALISTS

www.AtlasSales.com
Call 800.972.6600

MOVINCOOL
PREFERRED DISTRIBUTOR
MovinCool, SportCool & Office Pro are registered trademarks of DSISS Corporation.

ELECTRONIC FLOWHOOD™ DIRECT DIGITAL READOUT 25-2500 CFM



AUTOMATICALLY CORRECTS FOR AIR DENSITY AND BACKPRESSURE
CHOICE OF METERS - AIR FLOW ONLY, OR AIR FLOW, VELOCITY, PRESSURE AND TEMPERATURE
OPTIONS INCLUDE: MEMORY, AVERAGE AND SUM TO 100 READINGS, SEQUENTIAL RECALL, AUTO-READ
REPAIR POLICY - TWO WEEK TURNAROUND OR LESS
CUSTOM TOPS MADE TO ORDER

Shortridge Instruments, Inc.

7855 East Redfield Road • Scottsdale, Arizona 85260
(480) 991-6744 FAX (480) 443-1267