

'Upside Down Townhouse' Designer Demands Sustainability, Space-Saving features in Heat Pump System

The Challenge:

Jayna Cooper wanted to maximize her living space but the heating and cooling equipment would require setting aside scarce space to accommodate bulky HVAC ductwork.

Daikin's Solution:

With Daikin's 4-Port Multi-Split ductless system, Cooper regained use of valuable space and kept her commitment to sustainability with a system rated SEER 17.2 and HSPF 9.3.

Application:

Residential

Location:

Los Angeles, CA

When Los Angeles architect Jayna Cooper made the tough decision to take on complete responsibility for designing and building her new home on La Brea Avenue, she was faced with hundreds, if not thousands of product choices to be made throughout the process. Whether it was lighting, plumbing, windows, or doors, products were chosen with one guiding principle in mind: sustainability. But when it came to choosing a heating and cooling

system, another requirement was essential to the vision: design flexibility.

Her 1,600-sq.-ft. "upside down urban townhouse" would be a model of efficiency, where the use of space would be optimized and her living areas comfortable. The question facing her was how much of the precious space would be used to accommodate HVAC ductwork? If a conventional unitary ducted system were chosen, she would have to design a space



The 1,600-sq.-ft. home in Los Angeles designed and built by architect Jayna Cooper is a model of sustainability. It includes an energy-efficient, duct-free Daikin AC® 4-port Multi-Split system for heating and cooling.



Cooper's home has an open-loft design on the third floor, which includes the living, dining, kitchen and office areas. Two wall-mounted units service the space, including one in the kitchen area, operated by individual wireless remote controllers.

"Jayna liked the system's quiet operation and the fact that the indoor wall units fit the sleek look of her interior décor," Gary Alleman,
Geary Pacific Supply

The compact 32,000-Btu/h outdoor unit sits in the corner of the home's top-floor roof deck. It has a SEER rating of 17.2, one of the highest in the industry. The system features inverter technology, which delivers exactly the amount of heating or cooling needed to each zone of the home.



with space for ductwork throughout the stacked house, winding through the kitchen cabinets and closet space. After doing her research, she found the solution to her dilemma. A duct-free Daikin 4-port Multi-Split system that eliminated the need for ductwork, noisy outdoor compressors, or bulky window units was specified. "It turned out to be the perfect system for the type of place I have," Cooper said.

Cooper's home was recently featured in the prestigious

magazine *Architectural Record*, recognized for its innovative design, which includes a third floor open loft with living, dining, kitchen, and office; a second floor for two bedrooms; a first floor dedicated to the driveway and carport; and fourth floor roof deck. The Daikin system that serves the residence includes two unobtrusive CTXS12 wall-mounted indoor units located on opposite walls of the loft area and one CTXS09 indoor unit in each of the bedrooms. The compact 4MXS32 outdoor unit sits in the corner of

the roof deck. The 32,000-Btu/h system has a SEER rating of 17.2, one of the highest in the industry, and an HSPF rating of 9.3.

"STILL AMAZED"

With several manufacturers of duct-free heat pumps to choose from, Cooper made the decision to go with the Daikin system based on its inverter variable speed compressor technology, which operates at required capacity, delivering exactly the cooling or heating needed to maintain the

desired comfort condition while reducing energy consumption to one-third compared to normal on/off units. The system avoids short start/stop cycling operation of the compressor, reducing costly current peaks, and minimizes temperature fluctuations. The promise of energy efficiency and comfort are two of the factors that led Cooper to her choice. "When I design, I always do it with energy efficiency in mind; sustainability is a given for me," she said. "And now that I've used the system for many months, I'm still amazed at how instantaneous the heating and cooling is, even after I've turned off the system while I'm gone. Using the wireless remote controllers that come with each wall unit, I'm able to return the spaces to a desired temperature usually in less than two minutes."

During the design process, Cooper worked with the team of Gary Alleman, an expert with HVAC equipment distributor Geary Pacific Supply based in Orange, CA, and Delvis Jimenez, owner of Energy Plus, an installing contractor in Costa Mesa, CA. Together the team worked with Cooper through every design question and challenge. "Jayna had researched Daikin's reputation as the largest manufacturers of duct-free heat pumps in the world, which is what brought her to us,"

said Alleman. "And since dependability was so important to her, she also based her decision on the seven-year compressor warranty, which is two years longer than competitive products."

Alleman recalls other factors that impressed Cooper at the time.

"The system's quiet operation and the fact that the indoor wall units fit the sleek look of her interior décor," he said.

"It's really amazing how small and quiet the wall units are," Cooper noted. "You don't even know they're on." Because the third floor is a high-ceiling, open-loft design, she especially likes the ability of the wall units to vary air flow and direction through an oscillation feature on the remote controller. "No matter where I sit in my home, I can feel air movement and am completely comfortable."

SAVING ON LABOR

When Alleman at Geary Pacific and Jimenez at Energy Plus teamed up to work with the Los Angeles architect on the remarkable home, they were confident that the Daikin duct-free system would be the perfect fit, fulfilling all of Cooper's specifications. They both are advocates of inverter technology and have been recommending the technology to their residential and commercial

"Quotable"

Installing contractor, **Delvis Jimenez** of **Energy Plus** and distributor **Gary Alleman** of **Geary Pacific** both had positive things to say about Daikin AC and the highly efficient system selected for Cooper's home.

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Gary Alleman

"I can work so much more quickly than I could when installing unitary systems as long as I carefully follow the procedures recommended by the manufacturer involving flare connections, wiring, system sizing, and the use of the proper equipment."

Delvis Jimenez

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Delvis Jimenez

"As a contractor, all you really have to sell is your skilled labor. I've seen contractors' profit margins go up 60% by saving on labor when installing these ductless systems."

Gary Alleman

"Jayna was surprised at the high level of performance of the equipment," Jimenez noted. "Cooper said she would recommend the technology to anyone now that it is in use in her home."

Delvis Jimenez

customers. "Some of the companies that have worked solely with unitary systems are a little resistant to trying something new," Alleman said. "But those companies which are willing to break old habits and embrace the newer technology are finding that these systems are among the most dependable and energy efficient on the market," he said.

From the perspective of HVAC professionals, both men pointed to

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Jayna Cooper

the relatively quick installation process for the Daikin system as one of the biggest advantages to contractors. "I can work so much more quickly than I could when installing unitary systems as long as I carefully follow the procedures recommended by the manufacturer involving flare connections, wiring, system sizing, and the use of the proper equipment," Jimenez pointed out. "Using the training that Daikin gave me, I have had no callbacks

on my installations." Alleman, a trainer for Geary Pacific, thinks this point cannot be over-emphasized. "As a contractor, all you really have to sell is your skilled labor. I've seen contractors' profit margins go up 60% by saving on labor when installing these duct-free systems."

No callbacks naturally mean delivering a level of customer

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Jayna Cooper

satisfaction that frankly surprises and delights customers. "Jayna was surprised at the high level of performance of the equipment," Jimenez noted. "Cooper said she would recommend the technology to anyone now that it is in use in her home." Today an independent licensed architect, a LEED Accredited Professional, Jayna Cooper continues her focus of incorporating sustainability in everything she does. "Whether it's designing a home or choosing the products and systems in it, green building practices are paramount," she said.



Independent licensed architect and LEED Accredited Professional Jayna Cooper – along with Lucky – says that sustainability is a given in all of her designs. The new Daikin system she specified is "the perfect system for the type of place" she has.

Additional Information

Location

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Contacts

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Contractor

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Costa Mesa, CA 92526
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Daikin Equipment

(1)	4MXS32GVJU	32,000 Btu Outdoor Heat Pump Unit
(2)	CTXS12GVJU	Wall-mounted Indoor Fan Coil Unit
(2)	CTXS09GVJU	Wall-mounted Indoor Fan Coil Unit
(4)	ARC433B53	Wireless Remote Control

About Daikin AC

Daikin AC offers North America intelligent heating and cooling solutions with superior energy performance and sophisticated design. These advanced systems fall under the Daikin Altherma™, Quaternity™, VRV®, VRV-S and SkyAir product names. The company located in Carrollton, Texas, is owned by the Japanese-based *Daikin Industries, Ltd.* For more information, call 866-4DAIKIN or visit www.daikinac.com.

