



BROWARD COUNTY BOARD OF RULES AND APPEALS

FBC 8TH EDITION (2023) FORMAL INTERPRETATION (#4)

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Roofing Contractor

Board Attorney
Charles M. Kramer, Esq.

Board Administrative Director
Dr. Ana Barbosa

— Established 1971 —

DATE: October 12, 2023
TO: All Building Officials
FROM: Dr. Ana Barbosa, Administrative Director
SUBJECT: Solar-Assisted Air Conditioning Systems

At its regularly scheduled meeting on October 12, 2023, the Broward County Board of Rules and Appeals approved an interpretation of the following 8th Edition (2023) Florida Building Codes:

1. FBC, Mechanical Section 301.7 - Listed and Labeled,
2. FBC, Residential Section M1302.1 - Listed and Labeled,
3. FBC, Energy Conservation, Sections C403.2.3 and R303.1.2 HVAC equipment performance requirements.
4. FBC, 8th Edition (2023) FBC Broward County Administrative Provisions, Section 104.32. Alternative materials, design, and methods of construction and equipment.

The Board concurred with the Building Code Advisory Board of Palm Beach County Technical Advisory (attached), issued on 12/13/11.

Formal Interpretation:

The above sections are applicable to “solar-assisted air conditioning systems” (a conventional air conditioning system with a solar heat collector placed between the compressor and the condensing coils), and such systems must obtain certification or successfully pass testing by the State of Florida or a nationally recognized testing or certification agency prior to permitting.

EFFECTIVE DATE: September 14, 2012

EFFECTIVE DATE: December 31, 2023

*** PLEASE POST AT YOUR PERMIT COUNTER ***

Page 1 of 8 F.I. #4

BCAB

Building Code Advisory Board of Palm Beach County

TECHNICAL ADVISORY

Issued on 12-13-11
by Building Code Advisory Board

Subject: Solar-Assisted Air Conditioning System

This technical advisory is established as a "Public Awareness Notice" concerning a "Solar-Assisted A/C System" that modifies a factory matched air conditioning equipment system and that has been advertised recently in Palm Beach County. The creator of this hybrid system is promoting it, using several unsubstantiated claims regarding AHRI Certification, UL Listing, and dramatically improved SEER efficiency ratings.

This system should not be confused with other tested and certified air conditioning systems that incorporate solar photovoltaic panels into the electrical portion of their system. Unlike those designs, the "Solar-Assisted" portion of this system involves re-routing the refrigerant line up to the roof, and through a solar collector which is intended to "super heat" the gas prior to routing the line back to the condenser coil. There are many technical concerns with this design theory that prompted months of research by BCAB staff, the details of which are beyond the scope of this advisory.

However, there is specific information pertinent to the claims involving AHRI Certification, UL Listing, limitations on the pressures and approvals of solar panels, and dramatic increases in SEER efficiency that are worth noting:

- 1) Air Conditioning, Heating, and Refrigeration Institute communications (attached – BCAB letter available on request)
- 2) Florida Solar Energy Center communications (attached)
- 3) Manufacturers – the original equipment manufacturers of the Air Condensing Units that were contacted by BCAB staff, stated that their warranties and the UL Listing of their equipment would be voided by this type of field alteration.

It is the duty and the responsibility of the building official to ensure that products are properly installed in accordance with the manufacturer's instructions, certifications, and their listings. Installation of a system, that is not in compliance with listing and installation standards can lead to problems and invalidation of the warranty for the customer. When alternate materials, technologies, or designs are being proposed, it is incumbent on the applicant to provide enough information to substantiate the proposed alternative will comply with the code. The building official can request testing or other type of documentation when insufficient evidence is submitted at time of permitting. This firm has not demonstrated their claims with thorough and reliable science, engineering, testing, or demonstrated field applications. Due to the several above cited issues, and the extraordinary time spent by BCAB staff in the analysis of submitted materials that failed to substantiate the code-compliance of the hybrid system; the recommendation of the Board is that this system must obtain certification or successfully pass testing by a State of Florida or nationally recognized testing or certification agency, prior to permitting.

For Building Code Advisory Board


Jacek Tomasik, Chair

The Building Code Advisory Board of Palm Beach County was created by a Special Act of the Florida Legislature, at the request of the building code enforcement and construction industries. The purpose of the Board is to advise the Board of County Commissioners and local governments concerning the adoption of building codes and their enforcement throughout the County. The Act also granted Palm Beach County special powers concerning building codes, in the interest of the public's health, safety and general welfare.

2300 North Jog Road • West Palm Beach, Florida 33411-2741 • 561-233-5101 • FAX 561-233-5020

From: Nanjundaram, Sunil [mailto:SNanjundaram@ahrinet.org]
Sent: Wednesday, September 28, 2011 1:14 PM
To: Bob Boyer
Cc: Amrane, Karim; Tritsis, Bill
Subject: AHRI Response to BCAB letter

Dear Bob Boyer,

Thank you for calling me in reference to the letter sent by Mr. Jacek Tomasik. I will do my best to respond to your questions via this email.

I must begin by stating that currently it is not within the scope of any AHRI standard to test equipment with solar panels as accessories. Thus, AHRI does not have the ability to test and rate this equipment at this time and any claims of AHRI Certification, of products such as this, are invalid. I have attached the letter sent to Sedna Aire USA from AHRI to further detail to BCAB that AHRI will take action against any manufacturer that makes the same invalid claims.

Concerns 1-5 and 7 cannot be answered by AHRI as we do not design the equipment and therefore cannot provide adequate response to you.

Concern 6. No, as I noted above, AHRI does not have a standard for testing equipment with solar collectors as accessories. This is critical to AHRI's response to the BCAB.

Concern 8. No, as the original product has been modified, the firm adapting the equipment with the solar collector would have to join AHRI and test this equipment as an Original Equipment Manufacturer (OEM), not as a PBM.

Should you have any questions, please do not hesitate to contact me.

Best Regards,

Sunil Nanjundaram
Director, Certification Programs

Air-Conditioning, Heating, and Refrigeration Institute
2111 Wilson Blvd., Ste. 500, Arlington, Virginia 22201 USA
Tel: 703-600-0329 / Fax: 703-562-1942 / E-mail: snanjundaram@ahrinet.org
Check out our website at: <http://www.ahrinet.org>

AHRI Certified®: Over 50 Years of Leadership in Environmental Stewardship, Energy Efficiency, Performance, and Customer Satisfaction.

Follow AHRI on Twitter! Get the inside scoop directly from AHRI on breaking news, updates and information on industry initiatives.

Connect with AHRI on Facebook. Look for pictures, breaking news, industry related articles, and even the occasional quiz.

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Air-Conditioning, Heating,
and Refrigeration Institute

2111 Wilson Boulevard, Suite 500
Arlington, VA 22201 USA
www.ahri.net.org

PH 703.521.0800
FX 703.528.3815

September 7, 2011

Mr. Jim Hammond
Sedna Aire USA
440 NW 19th Street
Homestead, FL 33030

Re: Unauthorized Claim of AHRI Certification

Dear Mr. Hammond:

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) demands that your company immediately cease and desist from making any and all claims that the performance of its solar air conditioning products has been certified by AHRI, as exemplified by the enclosed promotional piece published by your company. In order for your company to claim AHRI certification it must be a participant in an AHRI certification program and have a signed license agreement with AHRI. Your company neither is an AHRI certification program participant nor has it been licensed by AHRI to use the AHRI name or registered AHRI certification mark. It is no defense to say that the "base" product has been certified by AHRI. Your company's claims of AHRI certification are misleading to the public, damaging to AHRI's reputation and must stop immediately. Please reply within 15 days detailing the actions taken by your company to comply fully with this demand.

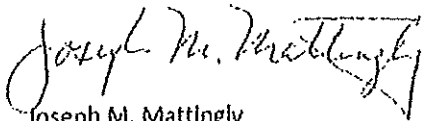
Also please be advised that the performance claims your company has been making to the public regarding its solar air conditioning products are in violation of federal law and subject to very substantial monetary penalties administered by the Federal Trade Commission (FTC). Federal law requires that any representations made to the public about the energy use or energy efficiency of products whose energy use is regulated under the federal Energy Policy and Conservation Act (EPCA) must be based on the use of efficiency test procedures prescribed by the U.S. Department of Energy (DOE) and must fairly disclose the results of such testing. See 42 U.S.C. § 6293(c). Residential central air conditioners and heat pumps are federally regulated products covered by EPCA. The efficiency test procedures prescribed by DOE for residential central air conditioners and heat pumps do not provide or account for the application of solar panels to the refrigeration cycle in residential central air conditioning. Therefore, your company has no legal basis upon which to make the efficiency rating claims it has been making to the public.

The enclosed promotional piece published by your company also claims that your company's solar air conditioning products are Energy Star approved. You should be aware that claims of Energy Star qualification may only be made by companies that have signed a license agreement with the U.S. Environmental Protection Agency (EPA) to use the Energy Star name or logo.

Mr. Jim Hammond
Sedna Aire USA
September 7, 2011
Page 2

AHRI strongly supports federal and local laws and policies aimed to protect the public from unsubstantiated product performance claims and AHRI's certification programs serve that purpose. AHRI therefore plans to notify DOE, the FTC, EPA, and the Florida Attorney General of your company's activities.

Sincerely,

A handwritten signature in cursive script, reading "Joseph M. Mattingly". The signature is written in dark ink and is positioned above the printed name and title.

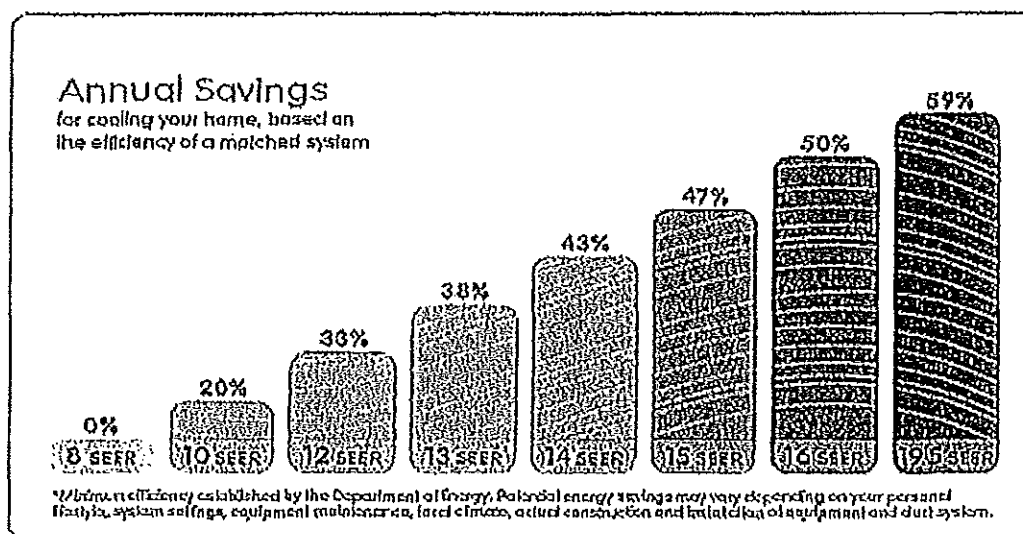
Joseph M. Mattingly
Secretary and General Counsel

Enclosure

Solar Air Conditioning *by Sedna Aire USA*

Solar Air Conditioning can save you lots of MONEY!

All Sedna Aire USA products start out with a 16 SEER rating before applying solar technology and grow to as much as 32 SEER...the amount of growth is dependent upon the energy supplied by your locations environment... In a sunny climate with temperatures of 85°F and above you should be well above 24 SEER!



Air conditioning using solar energy...cutting edge technology for the 21st Century!

How does a *Sedna Aire* solar air conditioner work?

The solar collector super heats the refrigerant changing the thermodynamic process of the refrigerant and reduces the required work of the compression operation of the compressor. This then lowers the required electrical consumption, reduces the running time of the entire system and maintains a more comfortable conditioned space.

By "Super Heating" the refrigerant with the aid of the Solar Collector, we are able to increase the temperature difference between the condenser coil and the ambient temperature. By creating this difference, Sedna Aire is able to utilize the entire coil face at the condenser which allows for a better heat exchange throughout the entire system.

With a greater heat exchange, Sedna Aire is able to not only reduce the temperature in the conditioned space but also maintain better humidity control which makes the space more

comfortable at a higher temperature...In addition your air conditioning unit doesn't run as long and cycles less.

Tested and certified...Energy Star, EcoLogic approved, AHRI & UL certified!

A S.E.E.R. (Seasonal Energy Efficiency Rating) is the rating and performance standards that have been developed by the U.S. government and equipment manufacturer's to produce an energy consumption rating that is easy to understand by consumers. It has a universal formula and conditioning that can be applied to all units and compensates for varying weather conditions.

ENERGY STAR is a government-backed program helping businesses and individuals protect the environment through *superior* energy efficiency.

AHRI administers the heating, ventilation, air conditioning and commercial refrigeration (HVACR) industry's performance certification programs for heating and cooling equipment and components. Manufacturers who have had their product performance claims tested and certified by AHRI can apply one of the association's families of certification marks.

Sedna Aire USA products are environment friendly, ecologic and made in the USA!

Solar energy is not only clean energy but it is free energy!

ecoLogic™ is your sign of an environmentally friendly, high-efficiency heating and cooling product.

Only the most energy-efficient, most environmentally responsible units receive the ecoLogic seal of quality.

How does a heating or cooling product earn the ecoLogic name? To qualify, products must meet the following criteria:

Rated as an Energy Star® product for efficiency.

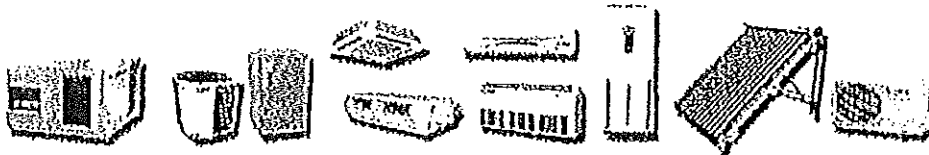
Use non-ozone-depleting refrigerant, such as R-410A, in cooling products.

Include multi-stage, variable-speed compressors for optimal indoor comfort and efficiency.

Feature "smart" control boards or diagnostic controls for total indoor air quality.

Incorporate noise-reducing features.

Green-Energy-Products.com 305.251.9630 - 800.639.8796 info@green-energy-products.com



From: Ann.Stanton@dca.state.fl.us [mailto:Ann.Stanton@dca.state.fl.us]
Sent: Friday, September 16, 2011 11:34 AM
To: Bob Boyer
Subject: FW: Solar Cool Permit Issues

----- Forwarded by Ann Stanton/DCA/FLEOC on 09/16/2011 11:33 AM -----

Phillip Falrey <pfalrey@fsec.ucf.edu>

To Ann.Stanton@dca.state.fl.us

cc Robin Vielra <robin@fsec.ucf.edu>

09/16/2011 10:49 AM

Subject Re: Fw: Solar Cool Permit Issues

Ann,

We have seen this proposed system before; it is described here:
<http://www.sednaaireusa.com/How%20it%20works.htm>. It does not work. In fact, it will decrease the efficiency of the air conditioner on which it is installed. In fact, one could make a cogent argument that if this concept were incorporated into a minimum efficiency air conditioner it would no longer meet the minimum federal standard for the manufacture and sale of air conditioner systems. The issue is that we want to extract heat from the loop between the compressor and condenser, not add heat to it- they have it exactly backward!

Philip

On 9/16/2011 10:29 AM, Ann.Stanton@dca.state.fl.us wrote:

Phillip: Does one of your people want to respond on this issue? I'd appreciate it.

Ann

----- Forwarded by Ann Stanton/DCA/FLEOC on 09/16/2011 10:28 AM -----

Bob Boyer
<BBOYER@pbccgov.org>

To "Ann.Stanton@dca.state.fl.us" <Ann.Stanton@dca.state.fl.us>

cc Rebecca Caldwell <rcaldwel@pbccgov.org>, Richard Gathright
<rgathrig@pbccgov.org>, Michael Fox <Mfox@pbccgov.org>

09/16/2011 10:16 AM

Subject FW: Solar Cool Permit Issues

Good Morning Ann,

I am forwarding ongoing correspondence that we are having with a solar contractor on the proposed field modification of a AC system. The contractor is proposing to install a thermal solar collector in the hot gas loop between the compressor and the condenser. We would be very interested in hearing your opinion and thoughts on this proposed installation. We have sent a letter to AHRI which I have attached also requesting input on the proposed installation. Thank you for your time in considering and responding to our questions.

Regards,

Bob

