Mobile Home & Energy

- **Understanding SEER Ratings for Mobile Home Cooling**

- **Exploring Common Certifications Required for Mobile Home HVAC Service**

- **About Us**

Exploring Common Certifications Required for Mobile Home HVAC Service

How SEER Ratings Impact Energy Efficiency in Mobile Homes

In the modern world of heating, ventilation, and air conditioning (HVAC) services, certifications have become a cornerstone for ensuring quality and reliability. Particularly for mobile home HVAC technicians, these credentials are not merely formalities but essential tools that signify competence, safety awareness, and a commitment to professional development. The importance of certifications in this field cannot be overstated as they serve multiple functions: enhancing technical skills, ensuring compliance with regulations, and building consumer trust.

Mobile homes present unique challenges compared to traditional housing due to their compact size and specific construction materials. Filters in mobile homes should be replaced regularly to maintain air quality **mobile home hvac units** wall. This necessitates specialized knowledge and skills that go beyond general HVAC training. Common certifications required for mobile home HVAC service often include EPA Section 608 Certification, NATE (North American Technician Excellence) certification, and manufacturer-specific training programs.

The EPA Section 608 Certification is pivotal because it authorizes technicians to handle refrigerants safely-a critical aspect of servicing HVAC systems in any setting. Given the environmental implications of refrigerant leaks, particularly in confined spaces like mobile homes, this certification ensures that technicians are well-versed in legal requirements and environmentally safe practices. It reassures homeowners that the technician is equipped to manage the delicate balance between effective cooling or heating solutions and ecological responsibility.

NATE certification is another highly regarded credential in the HVAC industry. It represents a standard of excellence recognized across North America. For mobile home HVAC

technicians, achieving NATE certification means they have demonstrated proficiency through rigorous testing in areas like air distribution, heat pumps, gas furnaces, oil furnaces, efficiency analysis, and more. This comprehensive skill set is crucial for tackling the diverse challenges encountered in mobile home environments where space constraints demand innovative solutions.

Moreover, many manufacturers offer specialized training programs that provide invaluable insights into new technologies and product-specific maintenance techniques. These programs enable technicians to stay abreast of industry advancements and enhance their ability to deliver top-notch service tailored specifically to the equipment they encounter on a day-to-day basis.

Certifications also play an integral role in building consumer confidence-a vital component for business success in today's competitive market. When customers see certified professionals working on their mobile home's HVAC system, it assures them of quality workmanship backed by recognized standards. This trust can lead to increased customer loyalty and positive word-of-mouth referrals-an invaluable asset for any technician or company looking to grow their client base.

In conclusion, certifications are indispensable for HVAC technicians specializing in mobile home services. They not only bolster technical expertise but also ensure compliance with environmental regulations while fostering trust among consumers. As such technologies continue to evolve rapidly within this sector; staying certified remains one step ahead towards delivering efficient safe reliable solutions needed maintain comfortable living conditions within these unique dwellings.

The world of Heating, Ventilation, and Air Conditioning (HVAC) is vast and intricate, requiring a blend of technical knowledge, practical skills, and an understanding of safety protocols. For those specializing in mobile home HVAC services, the landscape is particularly nuanced due to the unique challenges that these smaller, often more compact systems present. As such, acquiring the right certifications not only sharpens one's skills but also assures clients of a technician's competence and professionalism.

To begin with, one of the most fundamental certifications for any HVAC professional in the United States is the Environmental Protection Agency (EPA) Section 608 Certification. This certification is crucial because it authorizes technicians to handle refrigerants safely. Given that mobile homes often have compact HVAC systems where refrigerant management can be more challenging due to space constraints and design considerations, having this certification

ensures that a technician can work efficiently while adhering to environmental regulations.

Another significant credential is the North American Technician Excellence (NATE) certification. Recognized as one of the leading certifications in the industry, NATE provides technicians with specialized knowledge tailored to various facets of HVAC systems. For those working with mobile home units, obtaining a NATE certification specifically focused on heat pumps or air conditioning can be invaluable. These certifications ensure that technicians are well-versed in both troubleshooting issues specific to different types of equipment and optimizing performance within confined spaces typical of mobile homes.

Mobile home HVAC services also benefit greatly from specialized training offered by manufacturers through factory-specific certifications. Many leading HVAC brands offer training programs designed around their particular products. By participating in these programs and earning corresponding certifications, technicians gain an insider's perspective on proprietary technologies and system intricacies unique to each manufacturer's offerings.

Moreover, given that mobile homes might have distinctive structural attributes affecting airflow and temperature distribution-factors such as insulation quality or window placement-technicians may seek additional training related to energy efficiency standards or indoor air quality management. Certifications like those from RESNET (Residential Energy Services Network) enable professionals to conduct energy audits effectively-a service increasingly sought after as homeowners become more conscious about energy consumption.

In essence, while possessing core competencies remains vital for any HVAC specialist, those who focus on mobile home environments must adapt their expertise through targeted certifications that address both general industry requirements and niche demands inherent to these settings. By doing so, they not only enhance their credibility but also provide superior service tailored precisely to meet the needs of this unique client base. Through ongoing education and commitment to excellence demonstrated by acquiring relevant certifications, HVAC professionals continue setting high standards for service delivery across all domains they operate within-a testament not just to their skills but also their dedication towards advancing industry practices holistically.

Posted by on

Posted by on

Posted by on

Choosing the Right SEER Rating for Your Mobile Home HVAC System

In the world of mobile home HVAC service, specific certifications play a crucial role in ensuring that technicians are well-equipped to handle the unique challenges associated with heating, ventilation, and air conditioning systems in these dwellings. Mobile homes often have different construction standards and space constraints compared to traditional houses, which makes it essential for HVAC professionals to possess specialized knowledge and skills. This essay explores some of the common certifications required for mobile home HVAC service and their significance in maintaining safety and efficiency.

One of the fundamental certifications for any HVAC technician is the Environmental Protection Agency (EPA) Section 608 Certification. This certification is mandatory for anyone handling refrigerants, which are commonly used in air conditioning systems. The EPA certification ensures that technicians understand how to safely manage these substances without causing harm to the environment. Given the compact nature of mobile homes, where space is limited

and ventilation can be a challenge, proper management of refrigerants is even more critical.

Another important certification is the North American Technician Excellence (NATE) certification. NATE is a nationally recognized program that tests real-world working knowledge of HVACR systems. While not specific only to mobile homes, this certification indicates a high level of competence in various aspects of heating and cooling system installation and maintenance. For those specializing in mobile home HVAC service, earning NATE certification can provide reassurance to homeowners that they are receiving expert care tailored to their unique living situations.

For those specifically focusing on mobile homes, additional training or certification might come from manufacturers or industry-specific organizations offering courses on manufactured housing HVAC systems. These programs can provide insights into dealing with ductwork configurations particular to mobile homes or understanding how different building materials impact system performance. Such specialized training helps technicians address issues like airflow restrictions or insulation variations that are more prevalent in mobile settings.

Moreover, state-specific licenses or certifications may be required depending on regional regulations governing residential buildings and mechanical work within them. These local requirements ensure compliance with safety codes and standards unique to each area's climate considerations or structural designs typical among its housing stock.

In conclusion, obtaining specific certifications for mobile home HVAC service demonstrates a commitment to excellence and safety in this niche field. Certifications such as EPA Section 608 and NATE validate a technician's expertise while additional training related specifically to manufactured housing further enhances their capability in delivering efficient solutions tailored for these environments. As technology evolves alongside stricter environmental regulations, ongoing education through such certifications remains vital not just for professional growth but also for safeguarding homeowner satisfaction across diverse living spaces like those offered by mobile homes.

Factors Influencing SEER Rating Effectiveness in Mobile Homes

When it comes to maintaining a comfortable and efficient living environment in mobile homes, the role of HVAC systems cannot be overstated. These systems are essential for regulating temperature, ensuring good air quality, and promoting overall well-being. However, the effectiveness and longevity of an HVAC system heavily depend on the expertise of those who install, maintain, and repair it. This is where the benefits of hiring certified technicians come into play.

Certified technicians bring a wealth of knowledge and skills that are crucial for handling the unique challenges associated with mobile home HVAC systems. Unlike traditional homes, mobile homes have specific requirements due to their structure and space constraints. Certified professionals are trained to understand these nuances and apply their expertise accordingly.

One significant benefit of hiring certified technicians is their thorough understanding of industry standards and best practices. Certifications often require rigorous training programs that cover a wide range of topics such as system design, installation procedures, maintenance protocols, and safety precautions. Technicians who have completed certification programs are well-equipped to handle complex issues efficiently while adhering to safety regulations.

Moreover, certified technicians are adept at diagnosing problems accurately. Their training enables them to identify underlying issues that may not be immediately apparent to an untrained eye. This ability to pinpoint problems precisely can save homeowners time and money by preventing unnecessary repairs or replacements down the line.

In addition to technical proficiency, certified technicians often possess up-to-date knowledge about advancements in HVAC technology. The field is continuously evolving with new energy-efficient models and environmentally-friendly solutions emerging regularly. Certified professionals stay informed about these innovations through ongoing education requirements tied to their certifications. As a result, they can offer valuable advice on upgrades or modifications that align with both performance goals and budget considerations.

Common certifications required for mobile home HVAC service include those offered by organizations like North American Technician Excellence (NATE), Refrigeration Service Engineers Society (RSES), and Air Conditioning Contractors of America (ACCA). These certifications serve as benchmarks for competency within the industry and assure homeowners that they are working with qualified experts.

Furthermore, hiring certified technicians instills confidence in homeowners regarding warranty protection. Many manufacturers stipulate that warranties remain valid only if installations or repairs are performed by certified personnel-a testament to how much trust is placed on professional credentials within this sector.

In conclusion, investing in certified technicians for mobile home HVAC work reaps numerous rewards-ranging from technical excellence through adherence to standards-to peace of mind knowing one's investment is safeguarded by skilled hands operating at peak proficiency levels amidst ever-evolving technologies within this space!

Comparing SEER Ratings Across Different Mobile Home Cooling Systems

When considering hiring a technician for mobile home HVAC services, it is crucial to ensure that the individual possesses the necessary certifications and qualifications. This verification process not only safeguards the quality of work you will receive but also ensures compliance with industry standards and regulations. Understanding common certifications required in this field is essential for making informed hiring decisions.

One of the primary certifications to look for is the EPA Section 608 Certification. The Environmental Protection Agency (EPA) mandates this certification for technicians who handle refrigerants, which are commonly used in HVAC systems. There are different levels of this certification, such as Type I, II, and III, each corresponding to various applications and equipment types. Ensuring that your prospective technician holds at least a Type II certification guarantees they are qualified to work on high-pressure appliances commonly found in mobile homes.

Another important credential is NATE (North American Technician Excellence) certification. NATE is one of the most recognized programs in the HVAC industry, focusing on real-world working knowledge of heating and cooling systems. Technicians with NATE certification have demonstrated their proficiency through rigorous testing and continue to maintain high standards through ongoing education requirements. Hiring a NATE-certified professional provides peace of mind that they possess up-to-date skills and competencies.

State licensing can also play an integral role in verifying a technician's qualifications. Many states require HVAC technicians to hold specific licenses demonstrating their adherence to local laws and building codes. Checking if your potential hire has complied with these state-specific requirements adds another layer of reliability to your decision-making process.

To verify these certifications effectively, request copies directly from the technician during the interview phase or check online databases maintained by certifying bodies such as EPA or NATE. Cross-referencing information provided by candidates with these official sources can help confirm authenticity and validity.

Beyond technical certifications, evaluating soft skills relevant to customer service should not be overlooked when hiring an HVAC technician for mobile homes. Effective communication skills help establish clear expectations between you and the professional while ensuring efficient problem-solving during service delivery.

In conclusion, verifying technician certifications before hiring is vital in securing competent professionals capable of delivering safe and reliable mobile home HVAC services. By prioritizing credentials like EPA Section 608 Certification, NATE certification, state licensing compliance alongside assessing interpersonal abilities-you lay groundwork conducive towards fostering successful long-term relationships centered around trustworthiness expertise within industry standards boundaries thereby maximizing satisfaction both now future alike!

Tips for Maintaining Optimal Performance of High-SEER Rated Systems

In recent years, the HVAC industry has witnessed significant changes driven by technological advancements, environmental considerations, and regulatory updates. This dynamic landscape has had a pronounced impact on HVAC certification standards, especially for professionals servicing mobile homes. As the demand for energy-efficient and environmentally friendly solutions continues to rise, understanding current trends and anticipating future developments in HVAC certification is essential for technicians aspiring to excel in this niche market.

One of the most prominent trends shaping HVAC certification standards is the increasing emphasis on energy efficiency. With governments worldwide setting ambitious targets to reduce carbon emissions, there is a growing need for HVAC systems that consume less energy while maintaining optimal performance. Certifications such as ENERGY STAR have become crucial benchmarks in assessing system efficiency. For mobile home HVAC service providers, obtaining certifications that highlight expertise in installing and maintaining high-efficiency systems can offer a competitive edge, ensuring compliance with evolving regulations and meeting consumer expectations.

Another critical trend is the integration of smart technology into HVAC systems. The advent of IoT (Internet of Things) has transformed how these systems operate, enabling remote monitoring, predictive maintenance, and improved user control. Consequently, certifications now increasingly require knowledge of these advanced technologies. Technicians who are adept at integrating smart thermostats or managing connected devices will be better positioned to meet customer demands and enhance their service offerings in mobile home settings.

Environmental concerns are also driving changes in refrigerant use within HVAC systems. The phase-out of ozone-depleting substances like R-22 refrigerant necessitates that technicians stay up-to-date with new alternatives such as R-410A or other low-global-warming-potential options. Certifications often include modules focused on safe handling practices for these newer refrigerants to ensure compliance with international protocols like the Montreal Protocol.

Looking ahead, it's anticipated that certifications will increasingly focus on sustainability practices within the industry. This could involve training technicians on lifecycle assessments of HVAC components or sustainable disposal methods to minimize environmental impact further.

Moreover, as climate patterns continue to evolve unpredictably due to global warming effects-leading potentially hotter summers or colder winters-the ability to tailor solutions specifically suited for varying climatic conditions will likely become part of standard certification processes too.

In conclusion-and reflecting upon emerging trends-it becomes evident that staying abreast with current developments isn't merely advisable; it's imperative for any professional engaged in mobile home HVAC services today looking toward future success tomorrow! Embracing innovative technologies alongside stringent adherence towards eco-friendly practices embodied through comprehensive certification programs ensures not only career advancement but also contributes significantly towards creating sustainable living environments across communities served diligently by skilled practitioners everywhere!

About Fan coil unit

This article **relies largely or entirely on a single source**. Relevant discussion may be found on the talk page. Please help improve this article by introducing citations to additional sources.
Find sources: "Fan coil unit" – news · newspapers · books · scholar · JSTOR *(August 2014)*

This article **may be too technical for most readers to understand**. Please help improve it to make it understandable to non-experts, without removing the technical details. *(August 2014) (Learn how and when to remove this message)*

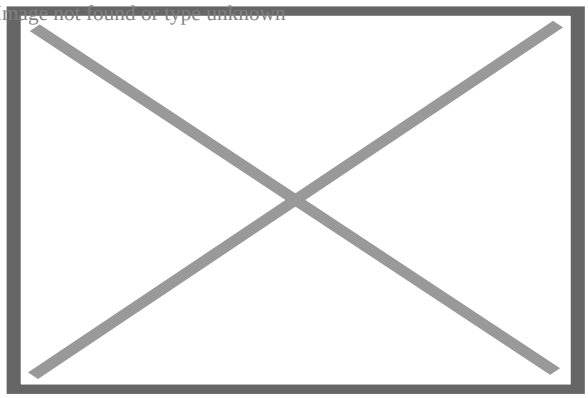
This article's **tone or style may not reflect the encyclopedic tone used on Wikipedia**. See Wikipedia's guide to writing better articles for suggestions. *(August 2014) (Learn how and when to remove this message)*

This article **may need to be rewritten** to comply with Wikipedia's quality standards. You can help. The talk page may contain suggestions. *(August 2023)*

This article has multiple issues. Please help **improve it** or discuss these issues on the **talk page**. *(Learn how and when to remove these messages)*

(Learn how and when to remove this message)

Image not found or type unknown



Refrigerant based Fan-Coil Unit. Other variants utilize a chilled, or heated water loop for space cooling, or heating, respectively.

Image not found or type unknown

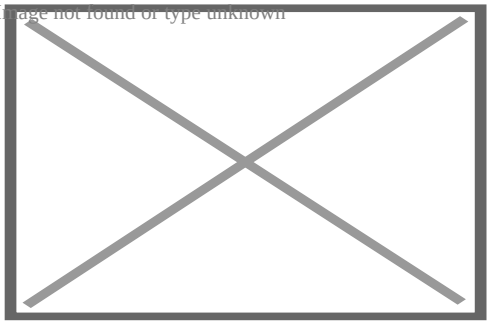
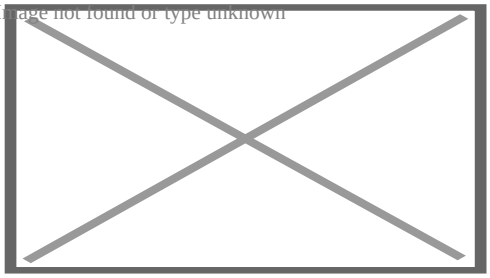


Image not found or type unknown



A **fan coil unit** (**FCU**), also known as a **Vertical Fan Coil Unit** (**VFCU**), is a device consisting of a heat exchanger (coil) and a fan. FCUs are commonly used in HVAC systems of residential, commercial, and industrial buildings that use ducted split air conditioning or central plant cooling. FCUs are typically connected to ductwork and a thermostat to regulate the temperature of one or more spaces and to assist the main air handling unit for each space if used with chillers. The thermostat controls the fan speed and/or the flow of water or refrigerant to the heat exchanger using a control valve.

Due to their simplicity, flexibility, and easy maintenance, fan coil units can be more economical to install than ducted 100% fresh air systems (VAV) or central heating systems with air handling units or chilled beams. FCUs come in various configurations, including horizontal (ceiling-mounted) and vertical (floor-mounted), and can be used in a wide range of applications, from small residential units to large commercial and industrial

buildings.

Noise output from FCUs, like any other form of air conditioning, depends on the design of the unit and the building materials surrounding it. Some FCUs offer noise levels as low as NR25 or NC25.

The output from an FCU can be established by looking at the temperature of the air entering the unit and the temperature of the air leaving the unit, coupled with the volume of air being moved through the unit. This is a simplistic statement, and there is further reading on sensible heat ratios and the specific heat capacity of air, both of which have an effect on thermal performance.

Design and operation

[edit]

Fan Coil Unit covers a range of products and will mean different things to users, specifiers, and installers in different countries and regions, particularly in relation to product size and output capability.

Fan Coil Unit falls principally into two main types: blow through and draw through. As the names suggest, in the first type the fans are fitted behind the heat exchanger, and in the other type the fans are fitted in front the coil such that they draw air through it. Draw through units are considered thermally superior, as ordinarily they make better use of the heat exchanger. However they are more expensive, as they require a chassis to hold the fans whereas a blow-through unit typically consists of a set of fans bolted straight to a coil.

A fan coil unit may be concealed or exposed within the room or area that it serves.

An exposed fan coil unit may be wall-mounted, freestanding or ceiling mounted, and will typically include an appropriate enclosure to protect and conceal the fan coil unit itself, with return air grille and supply air diffuser set into that enclosure to distribute the air.

A concealed fan coil unit will typically be installed within an accessible ceiling void or services zone. The return air grille and supply air diffuser, typically set flush into the ceiling, will be ducted to and from the fan coil unit and thus allows a great degree of flexibility for locating the grilles to suit the ceiling layout and/or the partition layout within a space. It is quite common for the return air not to be ducted and to use the ceiling void as a return air plenum.

The coil receives hot or cold water from a central plant, and removes heat from or adds heat to the air through heat transfer. Traditionally fan coil units can contain their own internal thermostat, or can be wired to operate with a remote thermostat. However, and as is common in most modern buildings with a Building Energy Management System

(BEMS), the control of the fan coil unit will be by a local digital controller or outstation (along with associated room temperature sensor and control valve actuators) linked to the BEMS via a communication network, and therefore adjustable and controllable from a central point, such as a supervisors head end computer.

Fan coil units circulate hot or cold water through a coil in order to condition a space. The unit gets its hot or cold water from a central plant, or mechanical room containing equipment for removing heat from the central building's closed-loop. The equipment used can consist of machines used to remove heat such as a chiller or a cooling tower and equipment for adding heat to the building's water such as a boiler or a commercial water heater.

Hydronic fan coil units can be generally divided into two types: Two-pipe fan coil units or four-pipe fan coil units. Two-pipe fan coil units have one supply and one return pipe. The supply pipe supplies either cold or hot water to the unit depending on the time of year. Four-pipe fan coil units have two supply pipes and two return pipes. This allows either hot or cold water to enter the unit at any given time. Since it is often necessary to heat and cool different areas of a building at the same time, due to differences in internal heat loss or heat gains, the four-pipe fan coil unit is most commonly used.

Fan coil units may be connected to piping networks using various topology designs, such as "direct return", "reverse return", or "series decoupled". See ASHRAE Handbook "2008 Systems & Equipment", Chapter 12.

Depending upon the selected chilled water temperatures and the relative humidity of the space, it's likely that the cooling coil will dehumidify the entering air stream, and as a by product of this process, it will at times produce a condensate which will need to be carried to drain. The fan coil unit will contain a purpose designed drip tray with drain connection for this purpose. The simplest means to drain the condensate from multiple fan coil units will be by a network of pipework laid to falls to a suitable point. Alternatively a condensate pump may be employed where space for such gravity pipework is limited.

The fan motors within a fan coil unit are responsible for regulating the desired heating and cooling output of the unit. Different manufacturers employ various methods for controlling the motor speed. Some utilize an AC transformer, adjusting the taps to modulate the power supplied to the fan motor. This adjustment is typically performed during the commissioning stage of building construction and remains fixed for the lifespan of the unit.

Alternatively, certain manufacturers employ custom-wound Permanent Split Capacitor (PSC) motors with speed taps in the windings. These taps are set to the desired speed levels for the specific design of the fan coil unit. To enable local control, a simple speed selector switch (Off-High-Medium-Low) is provided for the occupants of the room. This switch is often integrated into the room thermostat and can be manually set or

automatically controlled by a digital room thermostat.

For automatic fan speed and temperature control, Building Energy Management Systems are employed. The fan motors commonly used in these units are typically AC Shaded Pole or Permanent Split Capacitor motors. Recent advancements include the use of brushless DC designs with electronic commutation. Compared to units equipped with asynchronous 3-speed motors, fan coil units utilizing brushless motors can reduce power consumption by up to 70%.[1]

Fan coil units linked to ducted split air conditioning units use refrigerant in the cooling coil instead of chilled coolant and linked to a large condenser unit instead of a chiller. They might also be linked to liquid-cooled condenser units which use an intermediate coolant to cool the condenser using cooling towers.

DC/EC motor powered units

[edit]

These motors are sometimes called DC motors, sometimes EC motors and occasionally DC/EC motors. DC stands for direct current and EC stands for electronically commutated.

DC motors allow the speed of the fans within a fan coil unit to be controlled by means of a 0-10 Volt input control signal to the motor/s, the transformers and speed switches associated with AC fan coils are not required. Up to a signal voltage of 2.5 Volts (which may vary with different fan/motor manufacturers) the fan will be in a stopped condition but as the signal voltage is increased, the fan will seamlessly increase in speed until the maximum is reached at a signal Voltage of 10 Volts. fan coils will generally operate between approximately 4 Volts and 7.5 Volts because below 4 Volts the air volumes are ineffective and above 7.5 Volts the fan coil is likely to be too noisy for most commercial applications.

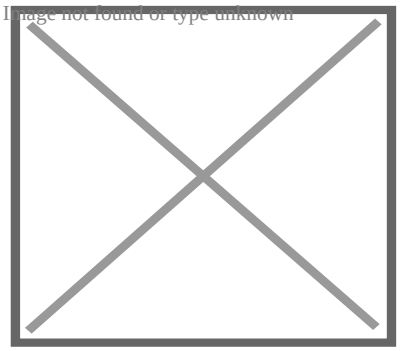
The 0-10 Volt signal voltage can be set via a simple potentiometer and left or the 0-10 Volt signal voltage can be delivered to the fan motors by the terminal controller on each of the Fan Coil Units. The former is very simple and cheap but the latter opens up the opportunity to continuously alter the fan speed depending on various external conditions/influences. These conditions/criteria could be the 'real time' demand for either heating or cooling, occupancy levels, window switches, time clocks or any number of other inputs from either the unit itself, the Building Management System or both.

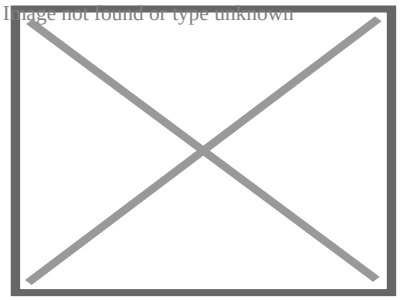
The reason that these DC Fan Coil Units are, despite their apparent relative complexity, becoming more popular is their improved energy efficiency levels compared to their AC motor-driven counterparts of only a few years ago. A straight swap, AC to DC, will reduce electrical consumption by 50% but applying Demand and Occupancy dependent

fan speed control can take the savings to as much as 80%. In areas of the world where there are legally enforceable energy efficiency requirements for fan coils (such as the UK), DC Fan Coil Units are rapidly becoming the only choice.

Areas of use

[edit]





In high-rise buildings, fan coils may be vertically stacked, located one above the other from floor to floor and all interconnected by the same piping loop.

Fan coil units are an excellent delivery mechanism for hydronic chiller boiler systems in large residential and light commercial applications. In these applications the fan coil units are mounted in bathroom ceilings and can be used to provide unlimited comfort zones - with the ability to turn off unused areas of the structure to save energy.

Installation

[edit]

In high-rise residential construction, typically each fan coil unit requires a rectangular through-penetration in the concrete slab on top of which it sits. Usually, there are either 2 or 4 pipes made of ABS, steel or copper that go through the floor. The pipes are usually insulated with refrigeration insulation, such as acrylonitrile butadiene/polyvinyl chloride

(AB/PVC) flexible foam (Rubatex or Armaflex brands) on all pipes, or at least on the chilled water lines to prevent condensate from forming.

Unit ventilator

[edit]

A unit ventilator is a fan coil unit that is used mainly in classrooms, hotels, apartments and condominium applications. A unit ventilator can be a wall mounted or ceiling hung cabinet, and is designed to use a fan to blow outside air across a coil, thus conditioning and ventilating the space which it is serving.

European market

[edit]

The Fan Coil is composed of one quarter of 2-pipe-units and three quarters of 4-pipe-units, and the most sold products are "with casing" (35%), "without casing" (28%), "cassette" (18%) and "ducted" (16%).[2]

The market by region was split in 2010 as follows:

Region	Sales Volume in units[2]	Share
Benelux	33 725	2.6%
France	168 028	13.2%
Germany	63 256	5.0%
Greece	33 292	2.6%
Italy	409 830	32.1%
Poland	32 987	2.6%
Portugal	22 957	1.8%
Russia, Ukraine and CIS countries	87 054	6.8%
Scandinavia and Baltic countries	39 124	3.1%
Spain	91 575	7.2%
Turkey	70 682	5.5%
UK and Ireland	69 169	5.4%
Eastern Europe	153 847	12.1%

See also

[edit]

Image not found or type unknown

Wikimedia Commons has media related to ***Fan coil units***.

- Thermal insulation
- HVAC
- Construction
- Intumescent
- Firestop

References

[edit]

1. **^** *"Fan Coil Unit". Heinen & Hopman. Retrieved 2023-08-30.*
2. ^ ***a b*** *"Home". Eurovent Market Intelligence.*

- v
- t
- e

Heating, ventilation, and air conditioning

Fundamental concepts	○ Air changes per hour ○ Bake-out ○ Building envelope ○ Convection ○ Dilution ○ Domestic energy consumption ○ Enthalpy ○ Fluid dynamics ○ Gas compressor ○ Heat pump and refrigeration cycle ○ Heat transfer ○ Humidity ○ Infiltration ○ Latent heat ○ Noise control ○ Outgassing ○ Particulates ○ Psychrometrics ○ Sensible heat ○ Stack effect ○ Thermal comfort ○ Thermal destratification ○ Thermal mass ○ Thermodynamics ○ Vapour pressure of water

Technology

- Absorption-compression heat pump
- Absorption refrigerator
- Air barrier
- Air conditioning
- Antifreeze
- Automobile air conditioning
- Autonomous building
- Building insulation materials
- Central heating
- Central solar heating
- Chilled beam
- Chilled water
- Constant air volume (CAV)
- Coolant
- Cross ventilation
- Dedicated outdoor air system (DOAS)
- Deep water source cooling
- Demand controlled ventilation (DCV)
- Displacement ventilation
- District cooling
- District heating
- Electric heating
- Energy recovery ventilation (ERV)
- Firestop
- Forced-air
- Forced-air gas
- Free cooling
- Heat recovery ventilation (HRV)
- Hybrid heat
- Hydronics
- Ice storage air conditioning
- Kitchen ventilation
- Mixed-mode ventilation
- Microgeneration
- Passive cooling
- Passive daytime radiative cooling
- Passive house
- Passive ventilation
- Radiant heating and cooling
- Radiant cooling
- Radiant heating
- Radon mitigation
- Refrigeration
- Renewable heat
- Room air distribution
- Solar air heat
- Solar combisystem
- Solar cooling
- Solar heating

- Air conditioner inverter
- Air door
- Air filter
- Air handler
- Air ionizer
- Air-mixing plenum
- Air purifier
- Air source heat pump
- Attic fan
- Automatic balancing valve
- Back boiler
- Barrier pipe
- Blast damper
- Boiler
- Centrifugal fan
- Ceramic heater
- Chiller
- Condensate pump
- Condenser
- Condensing boiler
- Convection heater
- Compressor
- Cooling tower
- Damper
- Dehumidifier
- Duct
- Economizer
- Electrostatic precipitator
- Evaporative cooler
- Evaporator
- Exhaust hood
- Expansion tank
- Fan
- Fan coil unit
- Fan filter unit
- Fan heater
- Fire damper
- Fireplace
- Fireplace insert
- Freeze stat
- Flue
- Freon
- Fume hood
- Furnace
- Gas compressor
- Gas heater
- Gasoline heater
- Grease duct

Components

- Grille

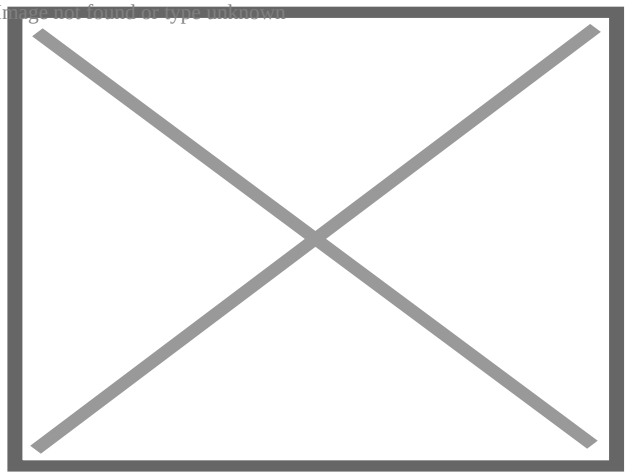
Measurement and control	○ Air flow meter ○ Aquastat ○ BACnet ○ Blower door ○ Building automation ○ Carbon dioxide sensor ○ Clean air delivery rate (CADR) ○ Control valve ○ Gas detector ○ Home energy monitor ○ Humidistat ○ HVAC control system ○ Infrared thermometer ○ Intelligent buildings ○ LonWorks ○ Minimum efficiency reporting value (MERV) ○ Normal temperature and pressure (NTP) ○ OpenTherm ○ Programmable communicating thermostat ○ Programmable thermostat ○ Psychrometrics ○ Room temperature ○ Smart thermostat ○ Standard temperature and pressure (STP) ○ Thermographic camera ○ Thermostat ○ Thermostatic radiator valve
Professions, trades, and services	○ Architectural acoustics ○ Architectural engineering ○ Architectural technologist ○ Building services engineering ○ Building information modeling (BIM) ○ Deep energy retrofit ○ Duct cleaning ○ Duct leakage testing ○ Environmental engineering ○ Hydronic balancing ○ Kitchen exhaust cleaning ○ Mechanical engineering ○ Mechanical, electrical, and plumbing ○ Mold growth, assessment, and remediation ○ Refrigerant reclamation ○ Testing, adjusting, balancing

Industry organizations	○ AHRI ○ AMCA ○ ASHRAE ○ ASTM International ○ BRE ○ BSRIA ○ CIBSE ○ Institute of Refrigeration ○ IIR ○ LEED ○ SMACNA ○ UMC
Health and safety	○ Indoor air quality (IAQ) ○ Passive smoking ○ Sick building syndrome (SBS) ○ Volatile organic compound (VOC)
See also	○ ASHRAE Handbook ○ Building science ○ Fireproofing ○ Glossary of HVAC terms ○ Warm Spaces ○ World Refrigeration Day ○ Template:Home automation ○ Template:Solar energy

About Manufactured housing

This article **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.
Find sources: "Manufactured housing" – news · newspapers · books · scholar · JSTOR *(May 2009) (Learn how and when to remove this message)*

Image not found or type unknown



A modern "triple wide" home

Manufactured housing (commonly known as mobile homes in the United States) is a type of prefabricated housing that is largely assembled in factories and then transported to sites of use. The definition of the term in the United States is regulated by federal law (Code of Federal Regulations, 24 CFR 3280): "Manufactured homes are built as dwelling units of at least 320 square feet (30 m^2) in size with a permanent chassis to assure the initial and continued transportability of the home."[1] The requirement to have a wheeled chassis permanently attached differentiates "manufactured housing" from other types of prefabricated homes, such as modular homes.

United States

[edit]

Definition

[edit]

According to the Manufactured Housing Institute's National Communities Council (MHINCC), *manufactured homes*[2]

> are homes built entirely in the factory under a federal building code administered by the U.S. Department of Housing and Urban Development (HUD). The Federal Manufactured Home Construction and Safety Standards (commonly known as the HUD Code) went into effect June 15, 1976. Manufactured homes may be single- or multi-section and are transported to the site and installed.

The MHINCC distinguishes among several types of *factory-built housing*: manufactured homes, modular homes, panelized homes, pre-cut homes, and mobile homes.

From the same source, *mobile home* "is the term used for manufactured homes produced prior to June 15, 1976, when the HUD Code went into effect."[2] Despite the formal definition, *mobile home* and *trailer* are still common terms in the United States for this type of housing.

History

[edit]

The original focus of this form of housing was its ability to relocate easily. Units were initially marketed primarily to people whose lifestyle required mobility. However, beginning in the 1950s, these homes began to be marketed primarily as an inexpensive form of housing designed to be set up and left in a location for long periods of time, or even permanently installed with a masonry foundation. Previously, units had been eight feet or less in width, but in 1956, the 10-foot (3.0 m) wide home was introduced. This helped solidify the line between mobile and house/travel trailers, since the smaller units could be moved simply with an automobile, but the larger, wider units required the services of a professional trucking company. In the 1960s and '70s, the homes became even longer and wider, making the mobility of the units more difficult. Today, when a factory-built home is moved to a location, it is usually kept there permanently. The mobility of the units has decreased considerably.

The factory-built homes of the past developed a negative stereotype because of their lower cost and the tendency for their value to depreciate more quickly than site-built homes. The tendency of these homes to rapidly depreciate in resale value made using them as collateral for loans far riskier than traditional home loans. Loan terms were usually limited to less than the 30-year term typical of the general home-loan market, and interest rates were considerably higher. In other words, these home loans resembled motor vehicle loans far more than traditional home mortgages. They have been consistently linked to lower-income families, which has led to prejudice and zoning restrictions, which include limitations on the number and density of homes permitted on any given site, minimum size requirements, limitations on exterior colors and finishes, and foundation mandates.

Many jurisdictions do not allow the placement of any additional factory-built homes, while others have strongly limited or forbidden all single-wide models, which tend to depreciate more rapidly than modern double-wide models. The derogatory concept of a "trailer park" is typically older single-wide homes occupying small, rented lots and remaining on wheels, even if the home stays in place for decades.

Modern manufactured homes

[edit]

Image not found or type unknown

A manufactured house ready to be assembled in Grass Valley, California

Modern homes, especially modular homes, belie this image and can be identical in appearance to site-built homes. Newer homes, particularly double-wides, tend to be built to much higher standards than their predecessors. This has led to a reduction in the rate of value depreciation of many used units.

Image not found or type unknown

A manufactured house just before construction of its garage

Image not found or type unknown

Stick built garage being added to a new manufactured house

Although great strides have been made in terms of quality, manufactured homes do still struggle with construction problems. Author Wes Johnson has pointed out that the HUD code which governs manufactured homes desperately needs to be updated, quality control at manufacturing facilities are often lax, and set-up issues often compromise even a well-made manufactured home. Johnson states buyers need to be exceptionally cautious if they are entertaining the idea of purchasing any manufactured home by carefully checking it for defects before signing the contract and supervising the set-up process closely. These homes in the modern age are built to be beautiful and last longer than the typical old trailers.[*citation needed*]

When FEMA studied the destruction wrought by Hurricane Andrew in Dade County Florida, they concluded that modular and masonry homes fared best compared to other construction.[3]

High-performance manufactured housing

[edit]

While manufactured homes are considered to be affordable housing, older models can be some of the most expensive in the nation to heat due to energy inefficiency.[4] *High-performance manufactured housing* uses less energy and therefore increases life-cycle affordability by decreasing operating costs. High-performance housing is not only energy efficient, but also attractive, functional, water-efficient, resilient to wind, seismic forces, and moisture penetration, and has healthy indoor environmental quality. Achieving high-performance involves integrated, whole building design, involving many components, not one single technology. High–performance manufactured housing should also include energy efficient appliances, such as Energy Star qualified appliances.[4] Energy Star requires ample insulation: 2x6 walls: R21, roof: R40, floor: R33.

Difference from modular homes

[edit]

Both types of homes - manufactured and modular - are commonly referred to as factory-built housing, but they are not identical. Modular homes are built to International Residential Code (IRC) code. Modular homes can be transported on flatbed trucks rather than being towed, and can lack axles and an automotive-type frame. However, some modular houses are towed behind a semi-truck or toter on a frame similar to that of a trailer. The house is usually in two pieces and is hauled by two separate trucks. Each frame has five or more axles, depending on the size of the house. Once the house has reached its location, the axles and the tongue of the frame are then removed, and the house is set on a concrete foundation by a large crane. Some modern modular homes, once fully assembled, are indistinguishable from site-built homes. In addition, modular homes:

- must conform to the same local, state and regional building codes as homes built on-site;
- are treated the same by banks as homes built on-site. They are easily refinanced, for example;
- must be structurally approved by inspectors;
- can be of any size, although the block sections from which they are assembled are uniformly sized;[5][6]

Difference from IRC codes homes (site built)

[edit]

Manufactured homes have several standard requirements that are more stringent than International Residential Code homes.

Fire Protection

A National Fire Protection Association (NFPA) study from July 2011 shows that occurrence of fires is lower in manufactured housing and the injury rate is lower in manufactured housing. The justification behind the superior fire safety is due to the following higher standard requirements:

- The HUD standard requires a flame spread of 25 or less in water heater and furnace compartments.
- The HUD standard requires a flame spread of 50 or less on the wall behind the range.
- The HUD standard requires a flame spread of 75 or less on the ceilings.
- The HUD standard requires a flame spread of 25 or less to protect the bottoms and side of kitchen cabinets around the range.
- The HUD standard requires additional protection of cabinets above the range.
- The HUD standard requires trim larger than 6" to meet flame spread requirements.
- The HUD standard requires smoke detectors in the general living area.
- The HUD standard requires 2 exterior doors.
- The HUD standard requires bedroom doors to be within 35 feet of an exterior door.

Bay Area

[edit]

The San Francisco Bay Area, located in Northern California, is known for its high real estate prices, making manufactured housing an increasingly popular alternative to traditional real estate.[7] It is mainly the value of the land that makes real estate in this area so expensive. As of May 2011, the median price of a home in Santa Clara was $498,000,[8] while the most expensive manufactured home with all the premium features was only $249,000.[9] This drastic price difference is due to the fact that manufactured homes are typically placed in communities where individuals do not own the land, but instead pay a monthly site fee. This enables a consumer, who could otherwise not afford to live in the Bay Area, the opportunity to own a new home in this location. There are various communities of manufactured homes in the Bay Area, the largest being Casa de Amigos, located in Sunnyvale, California.

Bulk material storage

- Image not found or type unknown
  Bulk material storage

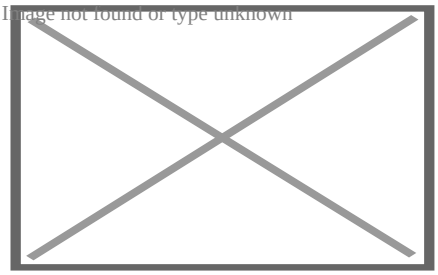
Construction starts with the frame

- Image not found or type unknown
  Construction starts with
  the frame
  Interior wall assemblies are attached
- Image not found or type unknown
  Interior wall assemblies
  are attached
  Exterior wall assemblies are set in place
- Image not found or type unknown
  Exterior wall
  assemblies are set in
  place
  Roof assembly is set atop the house
- Image not found or type unknown
  Roof assembly is set
  atop the house
  Drywall completed
- Image not found or type unknown
  Drywall completed
  House is ready for delivery to site
- Image not found or type unknown

House is ready for delivery to site

Australia

[edit]



An Australian modern prefabricated house

In Australia these homes are commonly known as **transportable homes**, **relocatable homes** or **prefabricated homes** (not to be confused with the American meaning of the term). They are not as common as in the US, but the industry is expected to grow as this method of construction becomes more accepted.

Manufactured home parks refer to housing estates where the house owner rents the land instead of owning it. This is quite common in Queensland in both the form of tourist parks and over fifty estates. The term transportable homes tends to be used to refer to houses that are built on land that is owned by the house owner.[*citation needed*]

Typically the homes are built in regional areas where the cost of organizing tradespeople and materials is higher than in the cities. In particular prefabricated homes have been popular in mining towns or other towns experiencing demand for new housing in excess of what can be handled by local builders. This method of construction is governed by state construction legislation and is subject to local council approval and homeowners' warranty or home warranty insurance.

Construction process

[edit]

A manufactured home is built entirely inside a huge, climate-controlled factory by a team of craftsmen. The first step in the process is the flooring, which is built in sections, each attached to a permanent chassis with its own wheels and secured for transport upon the home's completion. Depending on the size of the house and the floorplan's layout, there may be two, three or even four sections. The flooring sections have heating, electrical and plumbing connections pre-installed before they are finished with laminate, tile or hardwood. Next, the walls are constructed on a flat level surface with insulation and interior Sheetrock before being lifted by crane into position and secured to the floor sections. The interior ceilings and roof struts are next, vapor sealed and secured to each

section's wall frame before being shingled. Then, the exterior siding is added, along with the installation of doors and windows. Finally, interior finishing, such as sealing the drywall, is completed, along with fixture installation and finishing the electrical and plumbing connections. The exposed portions of each section, where they will eventually be joined together, are wrapped in plastic to protect them for transport.

With all the building site prep work completed, the building will be delivered by trucks towing the individual sections on their permanent chassis. The sections will be joined together securely, and all final plumbing and electrical connections are made before a decorative skirt or facade is applied to the bottom exterior of the house, hiding the chassis and finishing off the look of the home.

See also

[edit]

- Image not found or type unknown Housing portal
- Modular home
- Prefabrication
- Prefabricated home
- Reefer container housing units
- British post-war temporary prefab houses
- HUD USER
- Regulatory Barriers Clearinghouse
- Lustron house
- Cardinal Industries, Inc.
- Dymaxion house
- Excel Homes
- All American Homes
- All Parks Alliance for Change

References

[edit]

1. **^** *"HUD.gov / U.S. Department of Housing and Urban Development (HUD)". portal.hud.gov. Archived from the original on 2017-05-14. Retrieved 2020-03-24.*
2. ^ ***a b*** "What is a Manufactured Home?" Manufactured Housing Institute's National Communities Council, accessed 6 July 2011 Archived 23 March 2012 at the Wayback Machine
3. **^** *"FIA 22, Mitigation Assessment Team Report: Hurricane Andrew in Florida (1993) - FEMA.gov". www.fema.gov.*
4. ^ ***a b*** *Environmental and Energy Study Institute. "Issue Brief: High-Performance Manufactured Housing". eesi.org. Retrieved August 2, 2011.*
5. **^** https://homenation.com/mobile-vs-modular/ Modular home vs Manufactured home
6. **^** Kit Homes Guide

7. ^ *"2011 Coldwell Banker U.S. Home Listing Report". Coldwell Banker. Retrieved 6 July 2011.*
8. ^ *"Bay Area May Home Sales, Median Price Inch Up From April; Fall below 2010". DataQuick. Retrieved 6 July 2011.*
9. ^ *"Sunnyvale Model Home". Alliance Manufactured Homes. Archived from the original on 18 July 2011. Retrieved 6 July 2011.*

Image not found or type unknown

Wikimedia Commons has media related to ***Manufactured homes***.

About Durham Supply Inc

Photo

Image not found or type unknown
Photo

Image not found or type unknown
Photo

Image not found or type unknown
Photo

Image not found or type unknown
Photo

Image not found or type unknown
Photo

Image not found or type unknown

Things To Do in Oklahoma County

Photo

Martin Park Nature Center

4.7 (2457)

Photo

Image not found or type unknown

National Cowboy & Western Heritage Museum

4.8 (5474)

Photo

Image not found or type unknown

Sanctuary Asia

5 (1)

Photo

Oklahoma City's Adventure District

4.2 (37)

Photo

Image not found or type unknown

Centennial Land Run Monument

4.8 (811)

Photo

Image not found or type unknown

Lighthouse

4.7 (993)

Driving Directions in Oklahoma County

Driving Directions From Orr Nissan Central to Durham Supply Inc

Driving Directions From Diamond Ballroom to Durham Supply Inc

Driving Directions From Residence Inn Oklahoma City South to Durham Supply Inc

Driving Directions From Oklahoma City to Durham Supply Inc

Driving Directions From The Home Depot to Durham Supply Inc

Driving Directions From Burlington to Durham Supply Inc

**https://www.google.com/maps/dir/Diamond+Ballroom/Durham+Supply+Inc/@35.3862
97.4784568,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJU064a8wVsocRVF13slhX
97.4784568!2d35.3862678!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e0**

**https://www.google.com/maps/dir/Central+Oklahoma+City/Durham+Supply+Inc/@35.4
97.5469309,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJxZlbw40QsocRSk-
KHB5_sB8!2m2!1d-
97.5469309!2d35.4787175!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e2**

**https://www.google.com/maps/dir/Burlington/Durham+Supply+Inc/@35.3932991,-
97.5096817,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJpZ837WsUsocRoduRUDt
97.5096817!2d35.3932991!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e1**

Driving Directions From Crystal Bridge Tropical Conservatory to Durham Supply Inc

Driving Directions From Stockyards City Main Street to Durham Supply Inc

Driving Directions From Oklahoma City's Adventure District to Durham Supply Inc

Driving Directions From Model T Graveyard to Durham Supply Inc

Driving Directions From National Cowboy & Western Heritage Museum to Durham Supply Inc

Driving Directions From Route 66 Park to Durham Supply Inc

**https://www.google.com/maps/dir/Bricktown+Water+Taxi/Durham+Supply+Inc/@35.4
97.5092944,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
97.5092944!2d35.4652226!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e0**

**https://www.google.com/maps/dir/Stockyards+City+Main+Street/Durham+Supply+Inc
97.5566911,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
97.5566911!2d35.4532302!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e2**

**https://www.google.com/maps/dir/Science+Museum+Oklahoma/Durham+Supply+Inc/
97.4754913,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
97.4754913!2d35.5237553!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e1**

**https://www.google.com/maps/dir/Centennial+Land+Run+Monument/Durham+Supply
97.5051775,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
97.5051775!2d35.4611333!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e3**

**https://www.google.com/maps/dir/Martin+Park+Nature+Center/Durham+Supply+Inc/@
97.6090052,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
97.6090052!2d35.6090059!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-
97.4774449!2d35.3963954!3e0**

Reviews for Durham Supply Inc

Durham Supply Inc

Image not found or type unknown

Noel Vandy

(5)

Thanks to the hard work of Randy our AC finally got the service it needed. These 100 degree days definitely feel long when your house isn't getting cool anymore. We were so glad when Randy came to work on the unit, he had all the tools and products he needed with him and it was all good and running well when he left. With a long drive to get here and only few opportunities to do so, we are glad he got it done in 1 visit. Now let us hope it will keep running well for a good while.

Durham Supply Inc

Image not found or type unknown

Jennifer Williamson

(5)

First we would like to thank you for installing our air conditioning unit! I'd like to really brag about our technician, Mack, that came to our home to install our unit in our new home. Mack was here for most of the day and throughly explained everything we had a question about. By the late afternoon, we had cold air pumping through our vents and we couldn't have been more thankful. I can tell you, I would be very lucky to have a technician like Mack if this were my company. He was very very professional, kind, and courteous. Please give Mack a pat on the back and stay rest assured that Mack is doing a great job and upholding your company name! Mack, if you see this, great job!! Thanks for everything you did!! We now have a new HVAC company in the event we need one. We will also spread the word to others!!

Durham Supply Inc

Image not found or type unknown

Crystal Dawn

(1)

I would give 0 stars. This isnTHE WORST company for heating and air. I purchased a home less than one year ago and my ac has gone out twice and these people refuse to repair it although I AM UNDER WARRANTY!!!! They say it's an environmental issue and they can't fix it or even try to or replace my warrantied air conditioning system.

Durham Supply Inc

Image not found or type unknown

K Moore

(1)

No service after the sale. I purchased a sliding patio door and was given the wrong size sliding screen door. After speaking with the salesman and manager several times the issue is still not resolved and, I was charged full price for an incomplete door. They blamed the supplier for all the issues…and have offered me nothing to resolve this.

Durham Supply Inc

Image not found or type unknown

Salest

(5)

Had to make a quick run for 2 sets of ?? door locks for front and back door.. In/ out in a quick minute! They helped me right away. ?? Made sure the 2 sets had the same ? keys. The ? bathroom was clean and had everything I needed. ? ?. Made a quick inquiry about a random item... they quickly looked it up and gave me pricing. Great ? job ?

Exploring Common Certifications Required for Mobile Home HVAC Service**View GBP**

Royal Supply Inc

Phone : +16362969959

City : Oklahoma City

State : OK

Zip : 73149

Address : Unknown Address

Google Business Profile

Company Website : **https://royal-durhamsupply.com/locations/oklahoma-city-oklahoma/**

Sitemap

Privacy Policy

About Us

Follow us