Air Quality

- **Mapping Duct Layouts for Cleaner Airflow in Mobile Homes**
  Mapping Duct Layouts for Cleaner Airflow in Mobile Homes Inspecting Vent Connections for Improved Air Quality Minimizing Drafts Through Sealed Mobile Home Duct Systems Scheduling Regular Cleanings for Mobile Home Ventilation Evaluating Filter Efficiency for Enhanced Mobile Home Air Quality Addressing Mold Risks in Mobile Home Ductwork Installing Air Purification Systems in Mobile Homes Checking Air Pressure to Reduce Allergens in Mobile Home Interiors Identifying Common Leaks in Flexible Mobile Home Ducts Balancing Humidity Levels for Healthier Mobile Home Air Considering UV Technology for Mobile Home Air Treatment Using Diagnostic Tools to Assess Air Quality in Mobile Homes
- **Preparing Mobile Home HVAC Units for Intense Summer Heat**
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Handling Power Outages in Mobile Home Heating Systems

Importance of Efficient Duct Layouts for Airflow

Power outages can pose significant challenges for residents of mobile homes, particularly when it comes to maintaining adequate heating during colder months. Understanding the common causes of these outages is essential for preparing and managing such situations effectively.

One of the primary causes of power outages affecting mobile homes is severe weather. Mobile homes are often located in areas more susceptible to harsh weather conditions, such as thunderstorms, high winds, and ice storms. Airflow balance is critical for consistent heating and cooling in mobile homes **Mobile Home Air Conditioning Installation Services** energy. These weather events can lead to downed power lines or blown transformers, disrupting the electrical supply. For instance, strong winds might topple trees onto power lines, cutting off electricity to entire neighborhoods that include mobile home communities.

Another common cause of power outages is equipment failure. Aging infrastructure and lack of maintenance can lead to breakdowns in the power grid that affect service delivery to mobile homes. Transformers and substations that have not been upgraded or properly maintained are prone to failures that can leave residents without power for extended periods.

Human error also contributes significantly to power disruptions. Construction work near mobile home parks may inadvertently damage underground cables or overhead lines, leading to unintended outages. Additionally, accidents involving vehicles colliding with utility poles can cause localized outages that impact mobile home residents.

Furthermore, issues with overloading the electrical system should not be overlooked. During peak usage times, especially in extreme temperatures when heating systems are running at full capacity, the demand on the electrical grid can exceed its capacity. This overload may trigger automatic shut-offs or even lead to equipment damage if not managed properly.

Understanding these common causes allows residents and community managers in mobile home parks to take precautionary measures aimed at minimizing disruption during a power outage. Investing in backup generators or alternative heating solutions like propane heaters ensures that critical services remain operational even when electrical service is interrupted.

In conclusion, while power outages cannot always be prevented due to uncontrollable factors like severe weather and human error, awareness and preparation remain key strategies for managing their impact on mobile home heating systems. By identifying potential risks and implementing proactive solutions, individuals living in mobile homes can ensure they remain warm and safe during unexpected disruptions in their electricity supply.

When a power outage occurs, particularly in the context of mobile home heating systems, it can be both inconvenient and stressful. Mobile homes often rely heavily on electricity for heating, making it crucial to know immediate steps to take to ensure safety and comfort. Here are several actions that can help mitigate the effects of a power outage.

First and foremost, remain calm. Panic can lead to poor decision-making, so it's essential to approach the situation with a clear head. Assess your surroundings and determine whether the outage is localized to your mobile home or if it affects a broader area. This information can usually be obtained by checking outside for any visible signs of power outages in neighboring homes or by using a battery-powered radio to listen for any announcements from local authorities.

Next, prioritize maintaining warmth within your home. Mobile homes typically have less insulation than traditional houses, which means they can lose heat more quickly during an outage. If you anticipate that the power might be out for an extended period, gather everyone into one room-preferably one without windows or with heavy curtains-and close off other areas of the home. This will help conserve body heat.

Consider using alternative sources of heat safely. If you have access to portable propane heaters or wood stoves designed for indoor use, these can be invaluable during a power outage. Be sure to follow all safety guidelines when using these devices; ensure proper ventilation to avoid carbon monoxide buildup and maintain safe distances from flammable materials.

Check on your mobile home's heating system once it is safe and reasonable to do so. When power returns, there may be issues such as tripped breakers or other electrical faults caused by the sudden loss and return of power. Understanding how your system works ahead of time will allow you to troubleshoot minor issues without delay.

In addition, keep communication lines open where possible. Use your phone sparingly if it's not charged fully but consider texting instead of calling as this uses less battery life and may work better when cell towers are overloaded during widespread outages.

Lastly, make sure you have emergency supplies ready before an outage happens again in the future–this includes flashlights with extra batteries, blankets, non-perishable food items, water supplies, and any necessary medications.

By taking these immediate steps when faced with a power outage in a mobile home heating system scenario, you can ensure both safety and comfort until normal conditions resume. Planning ahead with an emergency kit tailored specifically for such incidents will further enhance preparedness for future occurrences.

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Techniques for Mapping Duct Layouts

When living in a mobile home, one of the most critical considerations is ensuring that your heating system can withstand unexpected power outages. These interruptions can occur due to severe weather conditions, infrastructure issues, or maintenance work. To maintain comfort and safety during these times, having reliable backup power options for your mobile home's heating system is essential.

One of the most common and effective backup power solutions is the use of portable generators. These devices can supply electricity to essential appliances, including your heating system. Portable generators are relatively easy to operate and can be stored compactly when not in use. However, it's crucial to ensure proper ventilation when operating a generator to prevent carbon monoxide poisoning. Additionally, regular maintenance checks are necessary to ensure that the generator will function correctly during an outage.

Another viable option for mobile home residents is investing in battery-powered backup systems. These systems store electrical energy and can automatically kick in when there's a loss of power. The advantage of battery backups is their silent operation and ease of use-they require no fuel and minimal maintenance compared to generators. Moreover, advancements in technology have made these systems more efficient and longer-lasting than ever before.

For those interested in sustainable solutions, solar panels paired with battery storage offer a clean energy alternative for powering heating systems during outages. While the initial installation cost might be higher compared to other options, solar energy provides long-term savings on utility bills and reduces dependence on non-renewable resources. This solution also offers resilience by ensuring that as long as there is sunlight, your batteries are being charged.

In regions prone to frequent or prolonged outages, propane heaters present another option worth considering. Propane heaters do not rely on electricity but rather on propane gas tanks which are readily available at many retail locations. These heaters come in various sizes suitable for different space requirements within a mobile home and provide consistent heat output even during extended power interruptions.

Ultimately, selecting the right backup power option depends on factors such as budget, convenience, environmental impact, and personal preferences regarding reliability and ease of use. It's important for mobile home owners to evaluate these criteria carefully while preparing their homes for unforeseen circumstances.

To conclude, handling power outages effectively requires foresight and preparation-especially concerning heating systems vital for maintaining warmth throughout colder months or regions susceptible to extreme weather events affecting grid stability frequently experienced by residents living off-grid communities alike where traditional means may fall short under pressure without proper planning ahead time well spent indeed pays off dividends tenfold later down road ensuring peace mind knowing you're ready face whatever challenges arise head-on confidently equipped necessary tools tackle obstacles effortlessly come what may!


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Tools and Technologies for Accurate Duct Mapping

Handling power outages in mobile home heating systems can be a challenging task, especially when you're aiming to ensure the resilience of your HVAC system. Mobile homes have unique characteristics that make them more susceptible to temperature fluctuations during power outages, so it's crucial to maintain your system effectively.

Firstly, regular maintenance is key to ensuring your HVAC system remains reliable. Begin by routinely checking and replacing air filters. Clogged or dirty filters can reduce airflow, making it harder for your system to function efficiently even when the power is on. During an outage, having clean filters ensures that as soon as power returns, your system can operate optimally without unnecessary strain.

Next, inspect the ductwork for leaks or damage. Leaky ducts can lead to significant energy loss and inefficiency. By sealing any gaps with mastic sealant or metal tape, you ensure that once the power is restored, warm air distributes evenly throughout your home without escaping through cracks.

Another essential tip is to install a programmable thermostat with battery backup capabilities. This device allows you to retain programmed settings even during a power outage, helping you manage indoor temperatures more effectively when the electricity comes back on. It's also wise to set it at energy-saving temperatures during winter months when you're not at home.

Ensuring proper insulation in your mobile home is another vital aspect of maintaining HVAC resilience. Adequate insulation helps retain heat longer during an outage and reduces the workload on your heating system once power resumes. Check windows for drafts and use weather stripping as needed; similarly, consider adding insulation under floors and in walls if it's lacking.

Additionally, having alternative heat sources available can be beneficial. Portable heaters or wood stoves provide temporary warmth until full power returns. However, always prioritize safety by ensuring these devices are used according to manufacturer instructions and have proper ventilation.

Finally, consider investing in a generator if frequent outages are common in your area. A generator provides peace of mind by supplying backup electricity to keep essential systems like heating operational during prolonged blackouts.

In conclusion, maintaining HVAC resilience in mobile homes requires proactive measures focused on regular upkeep and strategic planning for disruptions like power outages. By adhering to these maintenance tips-cleaning filters regularly, inspecting ductwork for leaks, using programmable thermostats with battery backup capabilities-and preparing supplementary solutions such as alternative heat sources or generators-you ensure a comfortable environment despite unforeseen electrical interruptions.

Best Practices for Cleaner Airflow

In the modern world, where electricity is a staple in our daily lives, a power outage can be more than just an inconvenience; it can pose significant challenges, particularly for residents of mobile homes who rely on electric heating systems. Handling power outages effectively requires both safety precautions and emergency preparedness to ensure that residents remain safe and comfortable during unexpected interruptions.

Firstly, understanding the unique challenges faced by mobile home inhabitants is crucial. Mobile homes, often less insulated than traditional houses, can lose heat rapidly during winter months. This makes it imperative for residents to have a plan in place when their electric heating systems go offline due to a power outage.

One of the primary safety precautions involves maintaining alternative heating sources. Portable propane heaters or wood-burning stoves can serve as backup solutions. However, these alternatives come with their own set of risks, such as carbon monoxide poisoning or fire hazards. Therefore, it's essential to use them wisely and safely. Residents should ensure proper ventilation when using propane heaters and keep flammable materials away from any open flames or heat sources.

Another vital precaution is the installation of smoke detectors and carbon monoxide alarms throughout the mobile home. These devices are critical during power outages when alternative heating methods are employed. Regularly checking their functionality ensures early detection of any dangerous fumes or fires.

Emergency preparedness also includes having an adequate supply of essentials that could last through extended outages. Residents should stock up on non-perishable food items, bottled water, batteries, flashlights, and warm clothing or blankets to mitigate discomfort from loss of heat.

Moreover, creating a communication plan with family members or neighbors can prove invaluable during emergencies. Know how to contact local authorities or utility companies to report outages and receive updates about restoration efforts.

Equally important is staying informed about weather conditions that could lead to prolonged outages through battery-operated radios or apps on smartphones before they

lose charge. Planning ahead allows residents to take proactive measures rather than react defensively once an outage occurs.

Lastly, conducting regular maintenance checks on heating systems before winter sets in can prevent some common causes of failures during cold snaps. Ensuring that all components are functioning correctly reduces the risk of losing heat even if power remains available.

In conclusion, while power outages pose particular challenges for those relying on mobile home electric heating systems, taking appropriate safety precautions and preparing for emergencies can significantly reduce risks and enhance resilience against such events. By staying informed and equipped with alternative resources and plans for communication and sustenance needs will help maintain not only comfort but most importantly safety until electricity is restored fully.

Case Studies of Improved Air Quality in Mobile Homes

In the wake of a power outage, mobile home residents often face the daunting task of determining whether professional assistance is necessary to restore their heating systems. Mobile homes possess unique characteristics that can complicate this decision-making process, such as their smaller size, distinct construction materials, and specific heating system configurations. Evaluating the need for professional help involves several considerations that go beyond simply turning the heat back on.

First and foremost, safety should be paramount. Power outages can sometimes cause damage that is not immediately visible but may have significant implications for a mobile home's heating system. For instance, electrical surges when power is restored can impact the integrity of wiring or damage sensitive components within a furnace or heater. Additionally, if an outage was caused by severe weather conditions like heavy snow or ice storms, there might be structural concerns or external unit obstructions that require safe handling by professionals.

Another crucial factor is the complexity of modern mobile home heating systems themselves. Many rely on integrated technology and smart controls for efficiency and comfort. These systems may require specialized knowledge to diagnose issues properly after an outage has occurred. Attempting do-it-yourself repairs without adequate expertise could lead to further complications or invalidate warranties.

Furthermore, evaluating energy sources used in mobile home heating systems is critical when deciding on professional intervention post-outage. Systems powered by natural gas or propane might necessitate inspections for leaks or burner functionality checks by certified technicians to ensure safe operation upon restarting. Handling these energy sources without proper training poses significant risks both to residents and their property.

Residents must also consider the potential long-term benefits of seeking professional assistance versus addressing immediate concerns independently. A thorough inspection by a qualified technician could uncover underlying problems that may not manifest immediately but could lead to future outages or inefficiencies in heating performance. Professionals can provide preventative maintenance advice and make recommendations tailored specifically for mobile homes' unique needs.

Lastly, peace of mind cannot be underestimated in this evaluation process. Knowing that a trained expert has assessed your heating system post-outage ensures confidence in its reliability during colder months when consistent warmth is essential for comfort and health.

In conclusion, while some minor issues following a power outage might be manageable without external aid, assessing whether professional assistance is needed requires careful consideration of safety risks, system complexity, energy source specifics, long-term benefits versus short-term fixes-and ultimately-a desire for assurance regarding one's heating system's optimal functionality. By weighing these factors thoughtfully against personal capabilities and resources available locally (such as trusted HVAC service providers), mobile home residents can make informed decisions about seeking professional help after experiencing power disruptions impacting their heating setups.

In recent years, the increasing frequency and severity of power outages have highlighted the need for robust solutions to ensure mobile home heating systems remain operational

during such events. Mobile homes, often reliant on electric power for heating, face unique challenges in maintaining warmth when the grid goes down. Developing long-term strategies to minimize the impact of these outages is crucial not only for comfort but also for safety.

One effective solution is the integration of alternative energy sources into mobile home setups. Solar panels, coupled with battery storage systems, offer a sustainable way to provide backup power during outages. These systems can be particularly beneficial in areas with ample sunlight. By storing excess solar energy in batteries, homeowners can maintain essential functions like heating even when traditional power sources fail. Over time, advancements in photovoltaic technology and energy storage efficiency are likely to make this a more viable option for many mobile home owners.

Another promising approach involves upgrading insulation and weatherproofing measures within mobile homes. By enhancing thermal efficiency, homes can retain heat better and reduce reliance on active heating systems. High-quality insulation materials and techniques such as double-glazed windows or insulated skirting around the base of the mobile home help to maintain internal temperatures by minimizing heat loss. These upgrades not only provide resilience during power outages but also improve overall energy efficiency throughout the year, offering long-term savings on energy costs.

Investing in versatile heating systems that can operate on multiple fuel types is another strategic measure. For instance, incorporating propane or wood-burning stoves as supplementary heating options provides an additional layer of security against electricity-dependent failures. These alternatives ensure that even if one fuel source becomes unavailable or impractical due to a power outage, another can take its place temporarily.

Furthermore, smart home technology plays an increasingly vital role in mitigating the impacts of power outages on mobile home heating systems. Advanced thermostats and

monitoring devices allow homeowners to optimize their energy use based on real-time data and forecasts about potential outages. By pre-heating spaces or adjusting settings remotely via smartphone apps before an anticipated outage occurs, residents can better manage their home's temperature without excessive manual intervention.

Finally, community-based approaches should not be overlooked as part of long-term solutions. Mobile home parks or communities could collectively invest in centralized backup generators or shared solar arrays to ensure consistent access to heat during emergencies. Such communal efforts not only distribute costs more effectively but also foster a sense of shared responsibility and resilience among residents.

In conclusion, while no single solution will completely eliminate the risks posed by future power outages on mobile home heating systems, a combination of renewable energy adoption, improved insulation practices, diverse fuel options, smart technology integration, and community collaboration holds promise for significantly reducing their impact. As climate change continues to challenge existing infrastructure reliability across regions worldwide, these proactive measures become increasingly vital for safeguarding both comfort and safety in vulnerable housing sectors like mobile homes.

About Modular building

For the Lego series, see Lego Modular Buildings.

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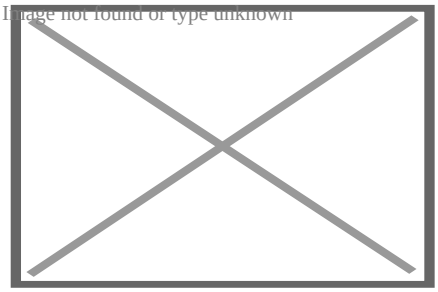

Prefabricated house in Valencia, Spain.

A **modular building** is a prefabricated building that consists of repeated sections called modules.[1] Modularity involves constructing sections away from the building site, then delivering them to the intended site. Installation of the prefabricated sections is completed on site. Prefabricated sections are sometimes placed using a crane. The modules can be placed side-by-side, end-to-end, or stacked, allowing for a variety of configurations and styles. After placement, the modules are joined together using inter-module connections, also known as inter-connections. The inter-connections tie the individual modules together to form the overall building structure.[2]

Uses

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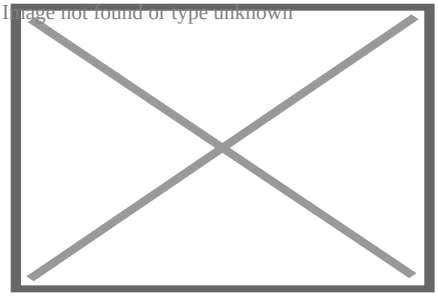

Modular home prefab sections to be placed on the foundation

Modular buildings may be used for long-term, temporary or permanent facilities, such as construction camps, schools and classrooms, civilian and military housing, and industrial facilities. Modular buildings are used in remote and rural areas where conventional construction may not be reasonable or possible, for example, the Halley VI accommodation pods used for a BAS Antarctic expedition.[3] Other uses

have included churches, health care facilities, sales and retail offices, fast food restaurants and cruise ship construction. They can also be used in areas that have weather concerns, such as hurricanes. Modular buildings are often used to provide temporary facilities, including toilets and ablutions at events. The portability of the buildings makes them popular with hire companies and clients alike. The use of modular buildings enables events to be held at locations where existing facilities are unavailable, or unable to support the number of event attendees.

Construction process

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Construction is offsite, using lean manufacturing techniques to prefabricate single or multi-story buildings in deliverable module sections. Often, modules are based around standard 20 foot containers, using the same dimensions, structures, building and stacking/placing techniques, but with smooth (instead of corrugated) walls, glossy white paint, and provisions for windows, power, potable water, sewage lines, telecommunications and air conditioning. Permanent Modular Construction (PMC) buildings are manufactured in a controlled setting and can be constructed of wood, steel, or concrete. Modular components are typically constructed indoors on assembly lines. Modules' construction may take as little as ten days but more often one to three months. PMC modules can be integrated into site built projects or stand alone and can be delivered with MEP, fixtures and interior finishes.

The buildings are 60% to 90% completed offsite in a factory-controlled environment, and transported and assembled at the final building site. This can comprise the entire building or be components or subassemblies of larger structures. In many cases, modular contractors work with traditional general contractors to exploit the resources and advantages of each type of construction. Completed modules are transported to the building site and assembled by a crane. [4] Placement of the modules may take from several hours to several days. Off-site construction running in parallel to site preparation providing a shorter time to project completion is one of the common selling points of modular construction.

Modular construction timeline

Permanent modular buildings are built to meet or exceed the same building codes and standards as site-built structures and the same architect-specified materials used in conventionally constructed buildings are used in modular construction projects. PMC can have as many stories as building codes allow. Unlike relocatable buildings, PMC structures are intended to remain in one location for the duration of their useful life.

Manufacturing considerations

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The entire process of modular construction places significance on the design stage. This is where practices such as Design for Manufacture and Assembly (DfMA) are used to ensure that assembly tolerances are controlled throughout manufacture and assembly on site. It is vital that there is enough allowance in the design to allow the assembly to take up any "slack" or misalignment of components. The use of advanced CAD systems, 3D printing and manufacturing control systems are important for modular construction to be successful. This is quite unlike on-site construction where the tradesman can often make the part to suit any particular installation.

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Walls attached to
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Ceiling drywalled in spray booth

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Pratt Modular Home in Tyler Texas

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Upfront production investment

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The development of factory facilities for modular homes requires significant upfront investment. To help address housing shortages in the 2010s, the United Kingdom Government (via Homes England) invested in modular housing initiatives. Several UK companies (for example, Ilke Homes, L&G Modular Homes, House by Urban Splash, Modulous, TopHat and Lighthouse) were established to develop modular homes as an alternative to traditionally-built residences, but failed as they could not book revenues quickly enough to cover the costs of establishing manufacturing facilities.

Ilke Homes opened a factory in Knaresborough, Yorkshire in 2018, and Homes England invested £30m in November 2019,[5] and a further £30m in September 2021.[6] Despite a further fund-raising round, raising £100m in December 2022,[7][8] Ilke Homes went into administration on 30 June 2023,[9][10] with most of the company's 1,150 staff made redundant,[11] and debts of £320m,[12] including £68m owed to Homes England.[13]

In 2015 Legal & General launched a modular homes operation, L&G Modular Homes, opening a 550,000 sq ft factory in Sherburn-in-Elmet, near Selby in Yorkshire.[14] The company incurred large losses as it invested in its factory before earning any revenues; by 2019, it had lost over £100m.[15] Sales revenues from a Selby project, plus schemes in Kent and West Sussex, started to flow in 2022, by which time the business's total losses had grown to £174m.[16] Production was halted in May 2023, with L&G blaming local planning delays and the COVID-19 pandemic for its failure to grow its sales pipeline.[17][18] The enterprise incurred total losses over seven years of £295m.[19]

Market acceptance

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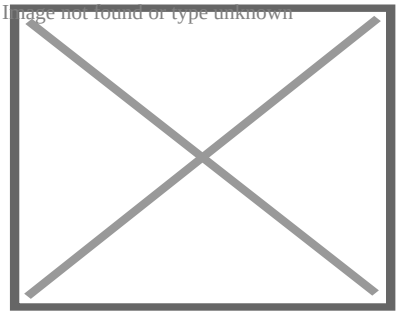

Raines Court is a multi-story modular housing block in Stoke Newington, London, one of the first two residential buildings in Britain of this type. (December 2005)

Some home buyers and some lending institutions resist consideration of modular homes as equivalent in value to site-built homes.[*citation needed*] While the homes

themselves may be of equivalent quality, entrenched zoning regulations and psychological marketplace factors may create hurdles for buyers or builders of modular homes and should be considered as part of the decision-making process when exploring this type of home as a living and/or investment option. In the UK and Australia, modular homes have become accepted in some regional areas; however, they are not commonly built in major cities. Modular homes are becoming increasingly common in Japanese urban areas, due to improvements in design and quality, speed and compactness of onsite assembly, as well as due to lowering costs and ease of repair after earthquakes. Recent innovations allow modular buildings to be indistinguishable from site-built structures.[20] Surveys have shown that individuals can rarely tell the difference between a modular home and a site-built home.[21]

Modular homes vs. mobile homes

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Differences include the building codes that govern the construction, types of material used and how they are appraised by banks for lending purposes. Modular homes are built to either local or state building codes as opposed to manufactured homes, which are also built in a factory but are governed by a federal building code.[22] The codes that govern the construction of modular homes are exactly the same codes that govern the construction of site-constructed homes.[*citation needed*] In the United States, all modular homes are constructed according to the International Building Code (IBC), IRC, BOCA or the code that has been adopted by the local jurisdiction.[*citation needed*] In some states, such as California, mobile homes must still be registered yearly, like vehicles or standard trailers, with the Department of Motor Vehicles or other state agency. This is true even if the owners remove the axles and place it on a permanent foundation.[23]

Recognizing a mobile or manufactured home

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A mobile home should have a small metal tag on the outside of each section. If a tag cannot be located, details about the home can be found in the electrical panel box. This tag should also reveal a manufacturing date.[*citation needed*] Modular homes do not have metal tags on the outside but will have a dataplate installed inside the home, usually under the kitchen sink or in a closet. The dataplate will provide information such as the manufacturer, third party inspection agency, appliance information, and manufacture date.

Materials

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The materials used in modular buildings are of the same quality and durability as those used in traditional construction, preserving characteristics such as acoustic insulation and energy efficiency, as well as allowing for attractive and innovative designs thanks to their versatility.[24] Most commonly used are steel, wood and concrete.[25]

- Steel: Because it is easily moldable, it allows for innovation in design and aesthetics.
- Wood: Wood is an essential part of most modular buildings. Thanks to its lightness, it facilitates the work of assembling and moving the prefabricated modules.
- Concrete: Concrete offers a solid structure that is ideal for the structural reinforcement of permanent modular buildings. It is increasingly being used as a base material in this type of building, thanks to its various characteristics such as fire resistance, energy savings, greater acoustic insulation, and durability.[26]

Wood-frame floors, walls and roof are often utilized. Some modular homes include brick or stone exteriors, granite counters and steeply pitched roofs. Modulars can

be designed to sit on a perimeter foundation or basement. In contrast, mobile homes are constructed with a steel chassis that is integral to the integrity of the floor system. Modular buildings can be custom built to a client's specifications. Current designs include multi-story units, multi-family units and entire apartment complexes. The negative stereotype commonly associated with mobile homes has prompted some manufacturers to start using the term "off-site construction."

New modular offerings include other construction methods such as cross-laminated timber frames.[27]

Financing

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Mobile homes often require special lenders.[28]

Modular homes on the other hand are financed as site built homes with a construction loan

Standards and zoning considerations

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Typically, modular dwellings are built to local, state or council code, resulting in dwellings from a given manufacturing facility having differing construction standards depending on the final destination of the modules.[29] The most important zones that manufacturers have to take into consideration are local wind, heat, and snow load zones.[*citation needed*] For example, homes built for final assembly in a hurricane-prone, earthquake or flooding area may include additional bracing to meet local building codes. Steel and/or wood framing are common options for building a modular home.

Some US courts have ruled that zoning restrictions applicable to mobile homes do not apply to modular homes since modular homes are designed to have a

permanent foundation.[*citation needed*] Additionally, in the US, valuation differences between modular homes and site-built homes are often negligible in real estate appraisal practice; modular homes can, in some market areas, (depending on local appraisal practices per Uniform Standards of Professional Appraisal Practice) be evaluated the same way as site-built dwellings of similar quality. In Australia, manufactured home parks are governed by additional legislation that does not apply to permanent modular homes. Possible developments in equivalence between modular and site-built housing types for the purposes of real estate appraisals, financing and zoning may increase the sales of modular homes over time.[30]

CLASP (Consortium of Local Authorities Special Programme)

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The Consortium of Local Authorities Special Programme (abbreviated and more commonly referred to as CLASP) was formed in England in 1957 to combine the resources of local authorities with the purpose of developing a prefabricated school building programme. Initially developed by Charles Herbert Aslin, the county architect for Hertfordshire, the system was used as a model for several other counties, most notably Nottinghamshire and Derbyshire. CLASP's popularity in these coal mining areas was in part because the system permitted fairly straightforward replacement of subsidence-damaged sections of building.

Building strength

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Modular Home being built in Vermont photo by Josh Vignona

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Modular home in Vermont

Modular homes are designed to be stronger than traditional homes by, for example, replacing nails with screws, adding glue to joints, and using 8–10% more lumber than conventional housing.[31] This is to help the modules maintain their structural integrity as they are transported on trucks to the construction site. However, there are few studies on the response of modular buildings to transport and handling stresses. It is therefore presently difficult to predict transport induced damage.[1]

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.[32]

CE marking

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The CE mark is a construction norm that guarantees the user of mechanical resistance and strength of the structure. It is a label given by European community empowered authorities for end-to-end process mastering and traceability.[*citation needed*

All manufacturing operations are being monitored and recorded:

- Suppliers have to be known and certified,
- Raw materials and goods being sourced are to be recorded by batch used,
- Elementary products are recorded and their quality is monitored,
- Assembly quality is managed and assessed on a step by step basis,

- When a modular unit is finished, a whole set of tests are performed and if quality standards are met, a unique number and EC stamp is attached to and on the unit.

This ID and all the details are recorded in a database, At any time, the producer has to be able to answer and provide all the information from each step of the production of a single unit, The EC certification guaranties standards in terms of durability, resistance against wind and earthquakes.[*citation needed*]

Open modular building

[edit]
See also: Green building

The term Modularity can be perceived in different ways. It can even be extended to building P2P (peer-to-peer) applications; where a tailored use of the P2P technology is with the aid of a modular paradigm. Here, well-understood components with clean interfaces can be combined to implement arbitrarily complex functions in the hopes of further proliferating self-organising P2P technology. Open modular buildings are an excellent example of this. Modular building can also be open source and green. Bauwens, Kostakis and Pazaitis[33] elaborate on this kind of modularity. They link modularity to the construction of houses.

This commons-based activity is geared towards modularity. The construction of modular buildings enables a community to share designs and tools related to all the different parts of house construction. A socially-oriented endeavour that deals with the external architecture of buildings and the internal dynamics of open source commons. People are thus provided with the tools to reconfigure the public sphere in the area where they live, especially in urban environments. There is a robust socializing element that is reminiscent of pre-industrial vernacular architecture and community-based building.[34]

Some organisations already provide modular housing. Such organisations are relevant as they allow for the online sharing of construction plans and tools. These plans can be then assembled, through either digital fabrication like 3D printing or even sourcing low-cost materials from local communities. It has been noticed that given how easy it is to use these low-cost materials are (for example: plywood), it can help increase the permeation of these open buildings to areas or communities that lack the know-how or abilities of conventional architectural or construction firms. Ergo, it allows for a fundamentally more standardised way of constructing houses and buildings. The overarching idea behind it remains key - to allow for easy access to user-friendly layouts which anyone can use to build in a more sustainable and affordable way.

Modularity in this sense is building a house from different standardised parts, like solving a jigsaw puzzle.

3D printing can be used to build the house.

The main standard is OpenStructures and its derivative Autarkytecture.[35]

Research and development

[edit]

Modular construction is the subject of continued research and development worldwide as the technology is applied to taller and taller buildings. Research and development is carried out by modular building companies and also research institutes such as the Modular Building Institute[36] and the Steel Construction Institute.[37]

See also

[edit]

- Image not found or type unknown Housing portal
- Affordable housing

- Alternative housing
- Commercial modular construction
- Construction 3D printing
- Container home
- Kit house
- MAN steel house
- Manufactured housing
- Modern methods of construction
- Modular design
- Portable building
- Prefabrication
- Open-source architecture
- Open source hardware
- OpenStructures
- Prefabricated home
- Relocatable buildings
- Recreational vehicles
- Shipping container architecture
- Stick-built home
- Tiny house movement
- Toter

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Portal:

- Image not found or type unknown housing

About Fan coil unit

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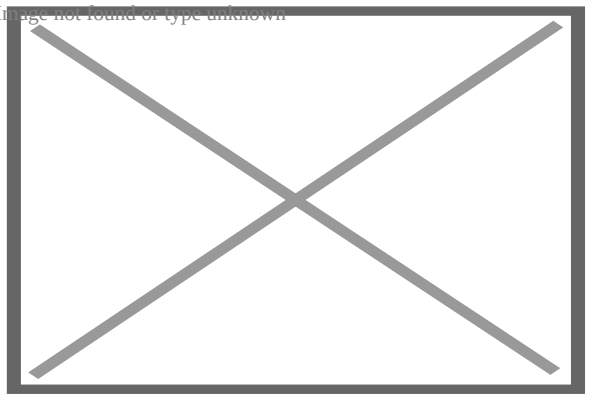
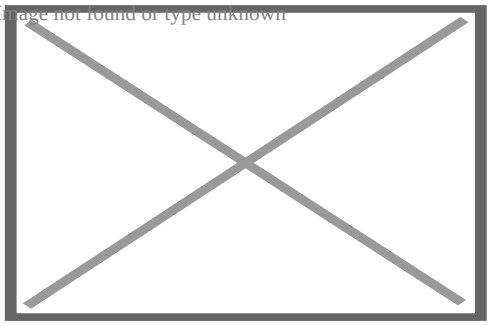
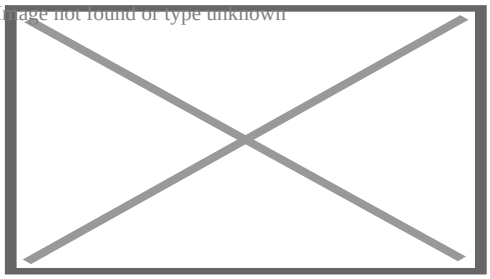


Refrigerant based Fan-Coil Unit. Other variants utilize a chilled, or heated water loop for space cooling, or heating, respectively.





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.

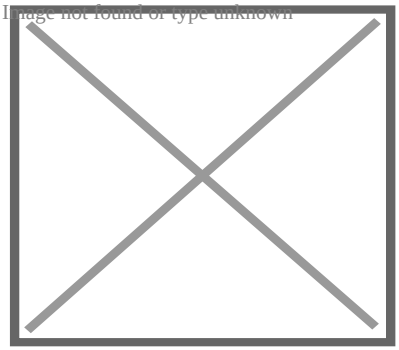
The 0–10 Volt signal voltage can be set via a simple potentiometer and left or the 0–10 Volt signal voltage can be delivered to the fan motors by the terminal controller on each of the Fan Coil Units. The former is very simple and cheap but

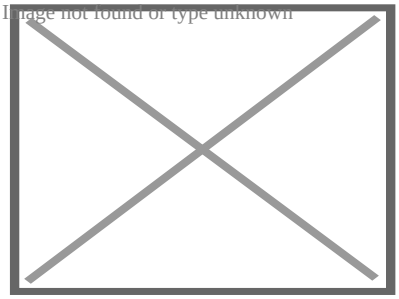
the latter opens up the opportunity to continuously alter the fan speed depending on various external conditions/influences. These conditions/criteria could be the 'real time' demand for either heating or cooling, occupancy levels, window switches, time clocks or any number of other inputs from either 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]

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

- Thermal insulation
- HVAC
- Construction
- Intumescent
- Firestop

References

[edit]

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2. ^ ***a b*** *"Home". Eurovent Market Intelligence.*

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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

- 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

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 Durham Supply Inc

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Things To Do in Tulsa County

Photo

Tours of Tulsa

4.9 (291)

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Streetwalker Tours

0 (0)

Photo

Image not found or type unknown

Philbrook Museum of Art

4.8 (3790)

Photo

Bob Dylan Center

4.9 (245)

Photo

Image not found or type unknown

The Blue Dome

4.5 (60)

Photo

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Golden Driller Statue

4.6 (1935)

Driving Directions in Tulsa County

Driving Directions From Brookhaven Hospitales to Durham Supply Inc

Driving Directions From Harmon Security Group LLC. to Durham Supply Inc

Driving Directions From Church on the Move Tulsa to Durham Supply Inc

Driving Directions From Nights Stay Hotel to Durham Supply Inc

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Driving Directions From Bob Dylan Center to Durham Supply Inc

Driving Directions From Gathering Place to Durham Supply Inc

Driving Directions From Blue Whale of Catoosa to Durham Supply Inc

Driving Directions From OkieTundra to Durham Supply Inc

Driving Directions From Golden Driller Statue to Durham Supply Inc

Driving Directions From Streetwalker Tours to Durham Supply Inc

https://www.google.com/maps/dir/Guthrie+Green/Durham+Supply+Inc/@36.15971695.9920028,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-95.9920028!2d36.1597162!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e0

https://www.google.com/maps/dir/The+Outsiders+House+Museum/Durham+Supply95.9703987,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-95.9703987!2d36.1654767!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-95.8384781!2d36.1563128!3e2

https://www.google.com/maps/dir/Gathering+Place/Durham+Supply+Inc/@36.1251
95.9840207,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
95.9840207!2d36.1251603!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-
95.8384781!2d36.1563128!3e1

https://www.google.com/maps/dir/Tours+of+Tulsa/Durham+Supply+Inc/@36.10031
95.9693584,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
95.9693584!2d36.1003128!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-
95.8384781!2d36.1563128!3e3

https://www.google.com/maps/dir/Tulsa+Air+and+Space+Museum+%26+Planetariu
95.8957281,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-
95.8957281!2d36.2067509!1m5!1m1!1sChIJDzPLSIrytocRY_EaORpHGro!2m2!1d-
95.8384781!2d36.1563128!3e0

Reviews for Durham Supply Inc

Durham Supply Inc

Image not found or type unknown

B Mann

(5)

I was in need of some items for a double wide that I am remodeling and this place is the only place in town that had what I needed (I didn't even try the other rude place)while I was there I learned the other place that was in Tulsa that also sold mobile home supplies went out of business (no wonder the last time I was in there they were VERY RUDE and high priced) I like the way Dunham does business they answered all my questions and got me the supplies I needed, very friendly, I will be back to purchase the rest of my items when the time comes.

Durham Supply Inc

Image not found or type unknown

Gerald Clifford Brewster

(5)

We will see, the storm door I bought says on the tag it's 36x80, but it's 34x80. If they return it.....they had no problems returning it. And it was no fault of there's, you measure a mobile home door different than a standard door!

Durham Supply Inc

Image not found or type unknown

Dennis Champion

(5)

Durham supply and Royal supply seems to find the most helpful and friendly people to work in their stores, we are based out of Kansas City out here for a few remodels and these guys treated us like we've gone there for years.

Handling Power Outages in Mobile Home Heating Systems**View GBP**

Frequently Asked Questions

How can I prepare my mobile home heating system for a power outage?

Ensure your heating system is well-maintained by regularly checking and servicing it. Have backup heat sources like propane heaters or portable generators ready. Insulate your mobile home to retain heat longer during outages.

What alternative heating options do I have if the electricity goes out?

Consider using propane or kerosene heaters, which dont rely on electricity. Wood-burning stoves or fireplaces (if available) are also effective alternatives. Always ensure proper ventilation when using these methods to avoid carbon monoxide buildup.

How can I keep my mobile home warm during an extended power outage?

Seal drafts with weatherstripping or heavy curtains, use thermal blankets, and dress in layers to conserve body heat. Gather everyone into one room to retain warmth more effectively. Use battery-powered fans to circulate warm air from alternative heat sources.

What safety precautions should I take when using non-electric heaters?

Follow manufacturer instructions carefully, maintain adequate ventilation to prevent carbon monoxide poisoning, and install battery-operated CO detectors. Keep flammable materials away from heaters and never leave them unattended while in use.

Royal Supply Inc

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State : OK

Zip : 73149

Address : Unknown Address

Google Business Profile

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

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