Mobile Home Owners

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Evaluating Costs of Upgrading Mobile Home AC Systems

Importance of Selecting the Right Units for Upgrades

Evaluating the costs of upgrading air conditioning (AC) systems in mobile homes necessitates an understanding of the common types of AC systems typically used in these settings. Mobile homes, due to their compact and often more energy-efficient design, require specific cooling solutions that differ from traditional residential structures. Thermostat settings should be adjusted to match seasonal needs in mobile homes **Mobile Home Air Conditioning Installation Services** water purification. The three primary types of AC systems used in mobile homes are window units, ductless mini-split systems, and packaged rooftop units. Each has its distinct features, cost implications, and suitability for different needs.

Window units are perhaps the most straightforward and economical choice for many mobile homeowners. These self-contained systems fit directly into a window frame or wall opening and are known for their ease of installation and affordability. For those living in smaller mobile homes or needing to cool only a single room, window units can be a cost-effective solution with minimal upfront investment. However, while they are budget-friendly initially, they may not be the most energy-efficient option over time if multiple units are required to cool larger spaces.

Ductless mini-split systems represent a more modern approach to mobile home air conditioning. Comprising an outdoor compressor unit connected to one or more indoor air handling units through refrigerant tubes and electrical wiring, these systems offer flexibility in installation and zone-specific climate control. While the initial cost is higher than that of window units-often involving professional installation-the long-term energy efficiency can lead to savings on utility bills. Moreover, mini-splits provide both heating and cooling functionalities, making them versatile year-round solutions.

Packaged rooftop units consolidate all components of an AC system into a single outdoor unit typically installed on the roof or adjacent ground space. These systems are beneficial for larger mobile homes that require centralized air conditioning without extensive ductwork modifications inside the home. Although installation might be complex given the structural considerations necessary for support on a roof or platform, packaged rooftop units offer robust performance suitable for maintaining consistent temperature control across larger areas.

When evaluating costs associated with upgrading mobile home AC systems, it is essential to consider not only the initial purchase price but also factors such as installation expenses, potential energy savings over time, maintenance requirements, and system longevity. Additionally, local climate conditions should inform decisions; warmer regions might justify investments in more efficient models due to higher usage rates.

Ultimately, choosing the right AC system upgrade depends on balancing immediate budget constraints against long-term operational benefits tailored to individual lifestyle preferences and climatic demands. By carefully assessing each option's advantages alongside financial implications-including potential incentives or rebates available at local levels-mobile homeowners can make informed choices that enhance comfort while optimizing expenditure over time.

Upgrading the air conditioning (AC) system of a mobile home can be a significant yet essential investment, especially for those seeking enhanced comfort and energy efficiency. The cost associated with such an upgrade can vary widely based on several influencing factors, each contributing to the overall expense in unique ways. Understanding these factors is crucial for homeowners aiming to make informed decisions and budget effectively.

One of the primary factors influencing the cost of upgrading a mobile home's AC system is the type and size of the unit being installed. Mobile homes have different cooling requirements compared to traditional houses due to their construction and size constraints. Choosing an AC unit that is appropriately sized for your space is vital; an undersized unit might struggle to cool efficiently, while an oversized one could lead to higher energy bills and reduced humidity control. Consequently, selecting the right type and capacity of AC unit-be it central air conditioning, ductless mini-split systems, or portable units-can significantly impact costs.

Another critical factor is the existing infrastructure within the mobile home. Older mobile homes may not have modern ductwork or electrical systems capable of supporting newer, more efficient AC units without upgrades or modifications. Retrofitting or replacing outdated components like ducts or electrical panels adds to the overall expense but often proves necessary for optimal performance and safety standards.

Labor costs also play a significant role in determining the total cost of an AC system upgrade. The complexity of installation varies depending on whether it's a simple replacement or involves extensive modifications to accommodate new technology. Professional installation ensures compliance with local building codes and maximizes system efficiency but comes with its own price tag that should be factored into budgeting considerations.

In addition to upfront costs, long-term expenses related to maintenance and energy consumption must be accounted for when evaluating options. More advanced systems with higher Energy Efficiency Ratios (EER) or Seasonal Energy Efficiency Ratios (SEER) might come at a premium initially but often result in lower electricity bills over time due to improved efficiency. Regular maintenance contracts can also add predictable costs but help maintain system reliability and longevity.

Lastly, geographic location can influence both material availability and labor rates, further affecting upgrade costs. Regions with hotter climates may have higher demands for specific types of cooling systems, which could affect pricing dynamics due to supply constraints or increased competition among service providers.

In conclusion, upgrading an AC system in a mobile home involves careful consideration of multiple factors that collectively influence cost. By assessing needs against available options-considering unit type and size, existing infrastructure compatibility, labor requirements, long-term operating expenses, and regional market conditions-homeowners can make well-informed decisions that balance immediate financial outlay with future savings on utility bills and overall comfort improvements.

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Energy Efficiency and Environmental Impact

When contemplating the costs of upgrading air conditioning systems in mobile homes, it is essential to consider not only the immediate expenses but also the long-term savings and energy efficiency improvements that such upgrades can bring. Mobile homes, often characterized by limited space and unique construction materials, present specific challenges when it comes to maintaining a comfortable indoor climate. Therefore, evaluating the costs of upgrading AC systems in these homes requires a comprehensive approach that weighs both short-term financial commitments and potential long-term benefits.

Initially, the primary focus tends to be on the upfront costs associated with purchasing and installing a new air conditioning unit. This includes the price of the unit itself, installation fees, and any necessary modifications to accommodate new equipment. While these expenditures can be significant, they must be viewed in light of their potential to reduce energy consumption over time. Modern AC systems are designed with advanced technologies that enhance energy efficiency, providing cooling solutions that consume less power compared to older models.

Energy efficiency considerations play a pivotal role in this evaluation process. Upgrading to an energy-efficient AC system can lead to substantial reductions in electricity bills. For mobile home residents who may already face financial constraints due to higher per-square-foot utility costs typical of these dwellings, any savings on energy bills are particularly valuable. Energy-efficient units operate using less electricity while still delivering effective cooling performance-this translates into significant cost savings over months and years.

Moreover, investment in an upgraded AC system can contribute positively towards environmental sustainability goals by reducing carbon footprints associated with excessive energy use. Many newer units come with eco-friendly refrigerants and comply with regulations aimed at minimizing environmental impact.

Another factor linked closely with energy efficiency is improved comfort levels within the home environment. An efficient air conditioning system ensures consistent temperatures throughout different areas of a mobile home without excessive cycling or uneven cooling patterns-issues commonly found with outdated systems. This enhancement contributes not just to physical comfort but also improves overall living conditions which can have indirect benefits like better health outcomes for residents who may suffer from heat-related illnesses during hotter months.

Long-term savings are another critical aspect when considering upgrading mobile home AC systems beyond just lowering utility bills-these include increased property value should homeowners decide eventually sell their properties or rent them out; prospective buyers/renters are likely attracted towards properties featuring modernized HVAC solutions recognizing inherent economic advantages therein.

In conclusion-the decision whether or not undergo upgrade your mobile home's air conditioning system goes far beyond mere initial outlay-it encompasses evaluating broader implications including enhanced energy efficiencies leading tangible monetary economies down line-and sometimes even intangible benefits improving quality life inside residence itself making worthwhile consideration all-around perspective balancing today's expenditure against tomorrow's gains thereby achieving sustainable equilibrium between cost-efficiency comfort ecological responsibility alike!

Cost-Effectiveness and Budget Considerations

Upgrading mobile home air conditioning systems can be a daunting task, fraught with potential challenges that can significantly impact both the initial and long-term costs. Mobile homes present unique characteristics that differentiate them from traditional houses, which means their AC systems often require special considerations when upgrades are being contemplated.

One of the primary challenges in upgrading mobile home AC systems lies in the structural limitations inherent to these dwellings. Mobile homes typically have less space and different construction materials than conventional homes, which can complicate the installation of larger or more sophisticated air conditioning units. The compact nature of mobile homes often necessitates smaller, specialized units that can efficiently fit within limited spaces without compromising performance. As a result, homeowners may find themselves facing higher costs for equipment specifically designed to meet these constraints.

Moreover, older mobile homes may have outdated electrical systems that are not equipped to handle modern AC units' power demands. Upgrading an air conditioning system in such cases might require a costly overhaul of the home's electrical infrastructure to ensure safety and functionality. This adds another layer of expenses, as hiring qualified electricians becomes necessary to carry out these updates before any new AC unit can be installed.

The insulation quality of many mobile homes also poses a significant challenge during an upgrade. Poor insulation can severely undermine even the most advanced air conditioning systems by allowing cool air to escape easily while letting heat seep in from outside. Consequently, homeowners might need to invest in improving their home's insulation as part of the upgrade process-an additional cost that must be factored into the overall budget.

Another consideration is compliance with local regulations and building codes which frequently apply differently to mobile homes compared to site-built residences. Ensuring adherence to these standards might mean extra paperwork or adjustments during installation, potentially leading to increased labor costs or delays if unforeseen issues arise.

Finally, one cannot overlook the intricacies involved in selecting energy-efficient models amidst rising concerns about environmental impact and utility bills. While energy-efficient models promise long-term savings on operating costs through reduced electricity consumption, they often come with higher upfront price tags that might strain immediate financial resources further.

In conclusion, while upgrading a mobile home's AC system promises enhanced comfort and potential energy savings, it brings with it several intrinsic challenges tied closely with its structure and existing facilities. Carefully evaluating these potential hurdles-ranging from structural limitations and electrical upgrades to regulatory compliance-is crucial for accurately estimating total costs involved in such endeavors. Understanding this complex landscape allows homeowners not only plan effectively but also make informed decisions tailored towards achieving optimal cooling efficiency within realistic budgetary parameters.

Sizing and Compatibility with Mobile Home Structures

When considering upgrading the air conditioning system in a mobile home, one of the pivotal decisions is choosing between professional installation and taking the do-it-yourself (DIY) route. Each option comes with its own set of financial implications, benefits, and challenges. Evaluating these aspects is crucial for making an informed choice that aligns with both budgetary constraints and personal capabilities.

At first glance, DIY installation may appear to be the more cost-effective option. By eliminating labor costs, homeowners can potentially save a significant amount of money upfront. The internet is rife with tutorials and guides that promise to walk even novices through complex processes step by step. For those who are handy or have some prior experience with home improvement projects, this could seem like an attractive prospect. However, it's essential to consider the hidden costs associated with DIY installations. These include purchasing or renting specialized tools, spending extra time on research and execution, and possibly incurring expenses from mistakes made during the process.

On the other hand, professional installation comes with its own set of advantages that might justify the higher initial cost. Professionals bring expertise and experience to the table, ensuring that the AC system is installed correctly and efficiently-something that can be especially valuable in older mobile homes where space constraints or structural peculiarities might pose unique challenges. Furthermore, hiring professionals often means gaining access to warranties on both labor and equipment-a safety net that can save money in case something goes awry post-installation.

In addition to immediate costs, long-term considerations should also weigh heavily in this decision-making process. A professionally installed AC system is likely to perform optimally over time due to precise calibration and high-quality workmanship. This efficiency can lead to lower energy bills in the long run compared to a poorly executed DIY job which might result in frequent breakdowns or suboptimal performance.

Moreover, there are regulatory factors to consider; local laws may require permits for certain types of installations which professionals are typically better equipped to handle efficiently than individual homeowners attempting a DIY project.

Ultimately, evaluating whether professional installation or DIY suits one's needs involves more than just comparing initial outlays; it requires a holistic assessment of skills, time availability, long-term efficiency gains versus potential pitfalls of amateur errors, warranty benefits versus upfront savings. As such decisions directly impact comfort levels during sweltering summer months as well as household finances year-round-it's worth dedicating ample thought towards understanding all variables involved before proceeding down either path when upgrading mobile home AC systems.

Installation Challenges and Solutions

Upgrading the air conditioning (AC) system in a mobile home can be a transformative improvement, enhancing comfort and energy efficiency. However, evaluating the costs associated with such upgrades often requires careful consideration of various factors. To elucidate this process, examining case studies or examples of successful AC system upgrades can provide valuable insights into the potential benefits and financial implications.

One illustrative case involves a mobile home community in Arizona, where residents faced scorching summers with inadequate cooling systems. A particular homeowner decided to upgrade from an aging window unit to a modern ductless mini-split system. This decision was driven by several considerations: the need for better cooling efficiency, reduced noise levels, and improved indoor air quality. The upfront cost of the mini-split system was approximately $3,000, including installation. However, the homeowner quickly realized significant savings on their monthly utility bills due to the energy-efficient nature of the new system. Over time, these savings helped offset the initial investment.

Another compelling example comes from a mobile home park in Florida. Here, a resident opted to replace their outdated central AC unit with an Energy Star-certified heat pump system. The project cost around $4,500 but qualified for federal tax credits and local utility rebates that effectively reduced the net expense by nearly 30%. Beyond financial incentives, this upgrade offered year-round climate control by providing both heating and cooling capabilities-a crucial advantage in Florida's variable weather conditions.

In contrast to these individual cases is a broader initiative undertaken by a non-profit organization focused on sustainable living solutions for low-income families residing in mobile homes across several states. Through partnerships with local governments and utility companies, they facilitated bulk purchases and installations of high-efficiency AC units at reduced costs for eligible households. This collective approach not only lowered per-unit installation expenses due to economies of scale but also empowered communities through workshops on optimizing energy use post-upgrade.

These examples underscore that while upgrading AC systems in mobile homes entails initial expenditures-from purchasing equipment to professional installation-there are pathways to mitigate these costs through strategic choices and available incentives. Evaluating such investments should consider not just immediate outlays but also long-term gains in energy efficiency, comfort improvements, and potential property value enhancements.

Ultimately, successful AC system upgrades demonstrate that judicious planning can lead to favorable outcomes both financially and environmentally. By learning from past experiences as illustrated in these case studies, homeowners can make informed decisions that align with their specific needs and circumstances while contributing positively towards sustainable living practices within their communities.

About Mobile home

This article is about the prefabricated structure. For the vehicle, see Recreational vehicle. For other uses, see Mobile home (disambiguation).
"Static Caravan" redirects here. For the record label, see Static Caravan Recordings.
"House on wheels" redirects here. For the South Korean variety show, see House on Wheels.

Globe icon.

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The examples and perspective in this article **deal primarily with the United States and do not represent a worldwide view of the subject**. You may improve this article, discuss the issue on the talk page, or create a new article, as appropriate. *(April 2017) (Learn how and when to remove this message)*

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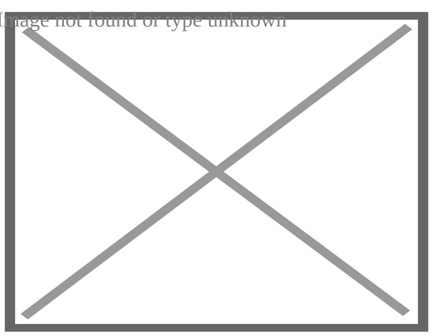

Mobile homes with detached single car garages

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Part of a series on

Living spaces

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Main

- House: detached
- semi-detached
- terraced
- Apartment
- Bungalow
- Cottage
- Ecohouse
- Green home
- Housing project
- Human outpost
- I-house
- Ranch
- Tenement
- Condominium
- Mixed-use development
- Hotel
- Hostel
- Castle
- Public housing
- Squat
- Flophouse
- Shack
- Slum
- Shanty town
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- Vagrancy

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- Ecovillage
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- Group home
- Halfway house
- Healthy community design
- Homeless shelter
- Hospital
- Local community
- Log house
- Natural building
- Nursing home
- Orphanage
- Prison
- Psychiatric hospital
- Residential care
- Residential treatment center
- Retirement community
- Retirement home
- Supportive housing
- Supported living

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Housing portal

A **mobile home** (also known as a **house trailer**, **park home**, **trailer**, or **trailer home**) is a prefabricated structure, built in a factory on a permanently attached chassis before being transported to site (either by being towed or on a trailer). Used as permanent homes, or for holiday or temporary accommodation, they are often left permanently or semi-permanently in one place, but can be moved, and may be required to move from time to time for legal reasons.

Mobile homes share the same historic origins as travel trailers, but today the two are very different, with travel trailers being used primarily as temporary or vacation homes. Behind the cosmetic work fitted at installation to hide the base, mobile homes have strong trailer frames, axles, wheels, and tow-hitches.

History

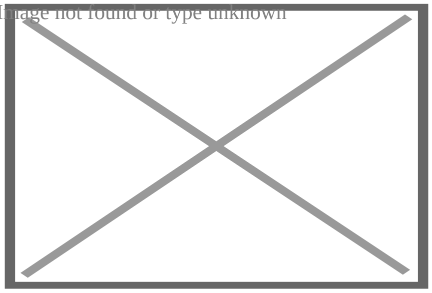
[edit]

In the United States, this form of housing goes back to the early years of cars and motorized highway travel.[1] It was derived from the travel trailer (often referred to during the early years as "house trailers" or "trailer coaches"), a small unit with wheels attached permanently, often used for camping or extended travel. The original rationale for this type of housing was its mobility. Units were initially marketed primarily to people whose lifestyle required mobility. However, in the 1950s, the 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 fewer in width, but in 1956, the 10-foot (3.0 m) wide home ("ten-wide") was introduced, along with the new term "mobile home".[2]

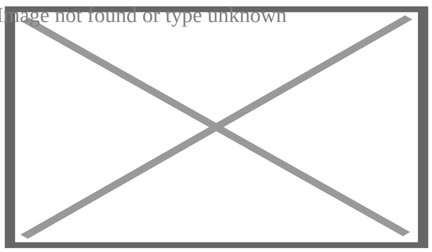
The homes were given a rectangular shape, made from pre-painted aluminum panels, rather than the streamlined shape of travel trailers, which were usually painted after assembly. All of this helped increase the difference between these homes and home/travel trailers. The smaller, "eight-wide" units could be moved simply with a car, but the larger, wider units ("ten-wide", and, later, "twelve-wide") usually required the services of a professional trucking company, and, often, a special moving permit from a state highway department. During the late 1960s and early 1970s, the homes were made even longer and wider, making the mobility of the units more difficult. Nowadays, when a factory-built home is moved to a location, it is usually kept there permanently and the mobility of the units has considerably decreased. In some states, mobile homes have been taxed as personal property if the wheels remain attached, but as real estate if the wheels are removed. Removal of the tongue and axles may also be a requirement for real estate classification.

Manufactured home

[edit]
Main article: Manufactured housing



Example of a modern manufactured home in New Alexandria, Pennsylvania. 28 by 60 feet (8.5 m × 18.3 m)



Manufactured home foundation

Mobile homes built in the United States since June 1976, legally referred to as manufactured homes, are required to meet FHA certification requirements and come with attached metal certification tags. Mobile homes permanently installed on owned land are rarely mortgageable, whereas FHA code manufactured homes are mortgageable through VA, FHA, and Fannie Mae.

Many people who could not afford a traditional site-built home, or did not desire to commit to spending a large sum of money on housing, began to see factory-built homes as a viable alternative for long-term housing needs. The units were often marketed as an alternative to apartment rental. However, the tendency of the units of this era to depreciate rapidly in resale value[*citation needed*] made using them as collateral for loans much riskier than traditional home loans. Terms were usually limited to less than the thirty-year term typical of the general home-loan market, and interest rates were considerably higher.[*citation needed*] In that way, mobile home loans resembled motor vehicle loans more than traditional home mortgage loans.

Construction and sizes

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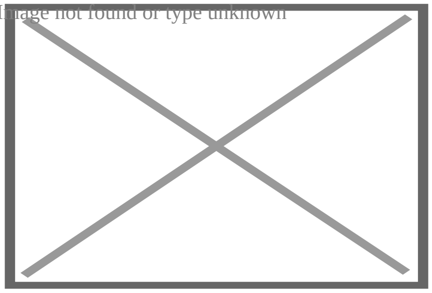

Exterior wall assemblies being set in place during manufacture

Mobile homes come in two major sizes, *single-wides* and *double-wides*. Single-wides are 18 feet (5.5 m) or less in width and 90 feet (27 m) or less in length and can be towed to their site as a single unit. Double-wides are 20 feet (6.1 m) or more wide and are 90 feet (27 m) in length or less and are towed to their site in two separate units, which are then joined. *Triple-wides* and even homes with four, five, or more units are also built but less frequently.

While site-built homes are rarely moved, single-wide owners often "trade" or sell their home to a dealer in the form of the reduction of the purchase of a new home. These "used" homes are either re-sold to new owners or to park owners who use them as inexpensive rental units. Single-wides are more likely to be traded than double-wides because removing them from the site is easier. In fact, only about 5% of all double-wides will ever be moved.[*citation needed*]

While an EF1 tornado might cause minor damage to a site-built home, it could do significant damage to a factory-built home, especially an older model or one that is not properly secured. Also, structural components (such as windows) are typically weaker than those in site-built homes.[3] 70 miles per hour (110 km/h) winds can destroy a mobile home in a matter of minutes. Many brands offer optional hurricane straps, which can be used to tie the home to anchors embedded in the ground.

Regulations

[edit]

United States

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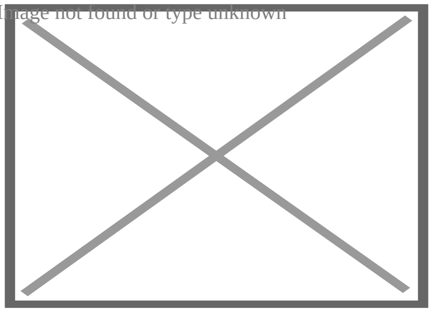

Home struck by tornado

In the United States, mobile homes are regulated by the US Department of Housing and Urban Development (HUD), via the Federal National Manufactured Housing Construction and Safety Standards Act of 1974. This national regulation has allowed many manufacturers to distribute nationwide because they are immune to the jurisdiction of local building authorities.[4] [5]
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By contrast, producers of modular homes must abide by state and local building codes. There are, however, wind zones adopted by HUD that home builders must follow. For example, statewide, Florida is at least wind zone 2. South Florida is wind zone 3, the strongest wind zone. After Hurricane Andrew in 1992, new standards were adopted for home construction. The codes for building within these wind zones were significantly amended, which has greatly increased their durability. During the 2004 hurricanes in Florida, these standards were put to the test, with great success. Yet, older models continue to face the exposed risk to high winds because of the attachments applied such as carports, porch and screen room additions. Such areas are exposed to "wind capture" which apply extreme force to the underside of the integrated roof panel systems, ripping the fasteners through the roof pan causing a series of events which destroys the main roof system and the home.

The popularity of the factory-built homes caused complications the legal system was not prepared to handle. Originally, factory-built homes tended to be taxed as vehicles rather than real estate, which resulted in very low property tax rates for their inhabitants. That caused local governments to reclassify them for taxation purposes.

However, even with that change, rapid depreciation often resulted in the home occupants paying far less in property taxes than had been anticipated and budgeted. The ability to move many factory-built homes rapidly into a relatively small area resulted in strains to the infrastructure and governmental services of the affected areas, such as inadequate water pressure and sewage disposal, and highway congestion. That led jurisdictions to begin placing limitations on the size and density of developments.

Early homes, even those that were well-maintained, tended to depreciate over time, much like motor vehicles. That is in contrast to site-built homes which include the land they are built on and tend to appreciate in value. The arrival of mobile homes in an area tended to be regarded with alarm, in part because of the devaluation of the housing potentially spreading to preexisting structures.

This combination of factors has caused most jurisdictions to place zoning regulations on the areas in which factory-built homes are placed, and limitations on the number and density of homes permitted on any given site. Other restrictions, such as minimum size requirements, limitations on exterior colors and finishes, and foundation mandates have also been enacted. There are many jurisdictions that will not allow the placement of any additional factory-built homes. Others have strongly limited or forbidden all single-wide models, which tend to depreciate more rapidly than modern double-wide models.

Apart from all the practical issues described above, there is also the constant discussion about legal fixture and chattels and so the legal status of a trailer is or could be affected by its incorporation to the land or not. This sometimes involves such factors as whether or not the wheels have been removed.

North Carolina

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The North Carolina Board of Transportation allowed 14-foot-wide homes on the state's roads, but until January 1997, 16-foot-wide homes were not allowed. 41 states allowed 16-foot-wide homes, but they were not sold in North Carolina. Under a trial program approved January 10, 1997, the wider homes could be delivered on specific roads at certain times of day and travel 10 mph below the speed limit, with escort vehicles in front and behind.[6][7] Eventually, all homes had to leave the state on interstate highways.[8]

In December 1997, a study showed that the wider homes could be delivered safely, but some opponents still wanted the program to end.[9] On December 2, 1999, the NC Manufactured Housing Institute asked the state Board of Transportation to expand the program to allow deliveries of 16-foot-wide homes within North Carolina.[8] A month later, the board extended the pilot program by three months but did not vote to allow shipments within the state.[10] In June 2000, the board voted to allow 16-foot-side homes to be shipped to other states on more two-lane roads, and to allow shipments in the state east of US 220. A third escort was required, including a law enforcement officer on two-lane roads.[11]

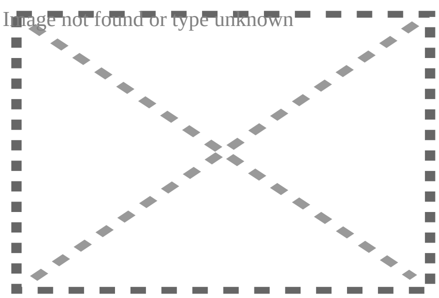
New York

[edit]

In New York State, the Homes and Community Renewal agency tracks mobile home parks and provides regulations concerning them. For example, the agency requires park owners to provide residents with a $15,000 grant if residents are forced to move when the land is transferred to a new owner. Residents are also granted the right of first refusal for a sale of the park, however, if the owner does not evict tenants for five years, the land sale can go ahead. State law also restricts the annual increase in land lot fee to a cap of 3 percent, unless the landowner demonstrates hardship in a local court, and can then raise the land lot fee by up to 6 percent in a year.[12]

Mobile home parks

[edit]
Main article: Trailer park



Meadow Lanes Estates Mobile Home Park, Ames, Iowa, August 2010, during a flood

Mobile homes are often sited in land lease communities known as trailer parks (also 'trailer courts', 'mobile home parks', 'mobile home communities', 'manufactured home communities', 'factory-built home communities' etc.); these communities allow homeowners to rent space on which to place a home. In addition to providing space, the site often provides basic utilities such as water, sewer, electricity, or natural gas and other amenities such as mowing, garbage removal, community rooms, pools, and playgrounds.

There are over 38,000[13] trailer parks in the United States ranging in size from 5 to over 1,000 home sites. Although most parks appeal to meeting basic housing needs, some communities specialize towards certain segments of the market. One subset of mobile home parks, retirement communities, restrict residents to those age 55 and older. Another subset of mobile home parks, seasonal communities, are located in popular vacation destinations or are used as a location for summer homes. In New

York State, as of 2019, there were 1,811 parks with 83,929 homes.[12]

Newer homes, particularly double-wides, tend to be built to much higher standards than their predecessors and meet the building codes applicable to most areas. That has led to a reduction in the rate of value depreciation of most used units.[14]

Additionally, modern homes tend to be built from materials similar to those used in site-built homes rather than inferior, lighter-weight materials. They are also more likely to physically resemble site-built homes. Often, the primary differentiation in appearance is that factory-built homes tend to have less of a roof slope so that they can be readily transported underneath bridges and overpasses.[*citation needed*]

The number of double-wide units sold exceeds the number of single-wides, which is due in part to the aforementioned zoning restrictions. Another reason for higher sales is the spaciousness of double-wide units, which are now comparable to site-built homes. Single-wide units are still popular primarily in rural areas, where there are fewer restrictions. They are frequently used as temporary housing in areas affected by natural disasters when restrictions are temporarily waived.[*citation needed*]

Another recent trend has been parks in which the owner of the mobile home owns the lot on which their unit is parked. Some of these communities simply provide land in a homogeneous neighborhood, but others are operated more like condominiums with club homes complete with swimming pools and meeting rooms which are shared by all of the residents, who are required to pay membership fees and dues.

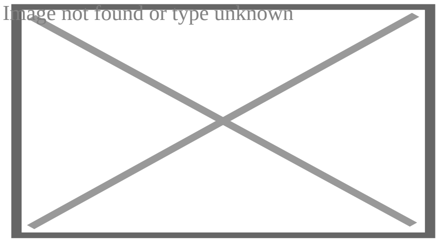
By country

[edit]

Mobile home (or mobile-homes) are used in many European campgrounds to refer to fixed caravans, purpose-built cabins, and even large tents, which are rented by the week or even year-round as cheap accommodation, similar to the US concept of a trailer park. Like many other US loanwords, the term is not used widely in Britain.[*citation need*

United Kingdom

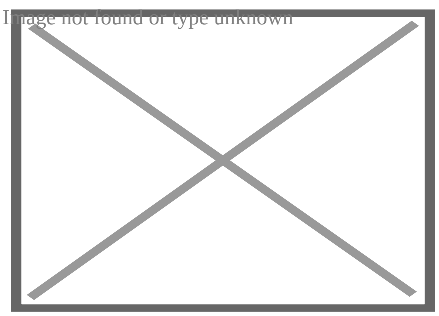
[edit]



A mobile home marketed as a holiday home

Mobile Homes or Static Caravans are popular across the United Kingdom. They are more commonly referred to as Park Homes or Leisure Lodges, depending on if they are marketed as a residential dwelling or as a second holiday home residence.

Residential Mobile homes (park homes) are built to the BS3632 standard. This standard is issued by the British Standards Institute. The institute is a UK body who produce a range of standards for businesses and products to ensure they are fit for purpose. The majority of residential parks in the UK have a minimum age limit for their residents, and are generally marketed as retirement or semi-retirement parks. Holiday Homes, static caravans or holiday lodges aren't required to be built to BS3632 standards, but many are built to the standard.



A static caravan park on the cliffs above Beer, Devon, England

In addition to mobile homes, static caravans are popular across the UK. Static caravans have wheels and a rudimentary chassis with no suspension or brakes and are therefore transported on the back of large flatbed lorries, the axle and wheels being used for movement to the final location when the static caravan is moved by tractor or 4×4. A static caravan normally stays on a single plot for many years and has many of the modern conveniences normally found in a home.

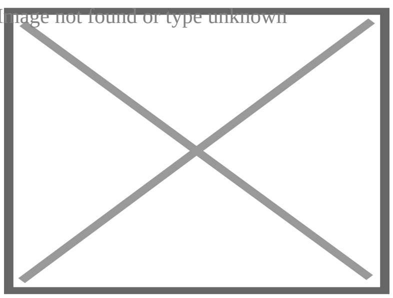
Mobile homes are designed and constructed to be transportable by road in one or two sections. Mobile homes are no larger than 20 m × 6.8 m (65 ft 7 in × 22 ft 4 in) with an internal maximum height of 3.05 m (10 ft 0 in). Legally, mobile homes can still be defined as "caravans".

Static holiday caravans generally have sleeping accommodation for 6 to 10 people in 2, 3 or 4 bedrooms and on convertible seating in the lounge referred to as a 'pull out bed'. They tend towards a fairly "open-plan" layout, and while some units are double glazed and centrally heated for year-round use, cheaper models without double glazing or central heating are available for mainly summer use. Static caravan holiday homes are intended for leisure use and are available in 10 and 12 ft (3.0 and 3.7 m) widths, a small number in 13 and 14 ft (4.0 and 4.3 m) widths, and a few 16 ft (4.9 m) wide, consisting of two 8 ft (2.4 m) wide units joined. Generally, holiday homes are clad in painted steel panels, but can be clad in PVC, timber or composite materials. Static caravans are sited on caravan parks where the park operator of the site leases a plot to the caravan owner. There are many holiday parks in the UK in which one's own static caravan can be owned. There are a few of these parks in areas that are prone to flooding and anyone considering buying a sited static caravan needs to take particular care in checking that their site is not liable to flooding.

Static caravans can be rented on an ad-hoc basis or purchased. Purchase prices range from £25,000 to £100,000. Once purchased, static caravans have various ongoing costs including insurance, site fees, local authority rates, utility charges, winterisation and depreciation. Depending on the type of caravan and the park these costs can range from £1,000 to £40,000 per year.[15] Some park owners used to have unfair conditions in their lease contracts but the Office of Fair Trading has produced a guidance document available for download called Unfair Terms in Holiday Caravan Agreements which aims to stop unfair practices.

Israel

[edit]
Main article: Caravan (Israel)



Posting of *caravan* in Mitzpe Hila, Israel, 1982

Many Israeli settlements and outposts are originally composed of caravans (Hebrew: ÃƒÆ’Ã†â€™Ãƒâ€ Ã¢â‚¬â„¢ÃƒÆ’Ã¢â‚¬Â ÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¢ÃƒÆ *caravan*; pl. ÃƒÆ’Ã†â€™Ãƒâ€ Ã¢â‚¬â„¢ÃƒÆ’Ã¢â‚¬Â ÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¢ÃƒÆ *caravanim*). They are constructed of light metal, are not insulated but can be outfitted with heating and air-conditioning units, water lines, recessed lighting, and floor tiling to function in a full-service capacity. Starting in 2005, prefabricated homes, named *caravillas* (Hebrew: ÃƒÆ’Ã†â€™Ãƒâ€ Ã¢â‚¬â„¢ÃƒÆ’Ã¢â‚¬Â ÃƒÂ¢Ã¢â€šÂ¬Ã¢â€žÂ¢ÃƒÆ’Ã†â€™Ãƒâ€šÃ‚Â¢ÃƒÆ), a portmanteau of the words caravan, and villa, begin to replace mobile homes in many Israeli settlements.

Difference from modular homes

[edit]
Main article: Modular home

Because of similarities in the manufacturing process, some companies build both types in their factories. Modular homes are transported on flatbed trucks rather than being towed, and lack axles and an automotive-type frame. However, some modular homes are towed behind a semi-truck or toter on a frame similar to that of a trailer. The home 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 home. Once the home has reached its location, the axles and the tongue of the frame are then removed, and the home is set on a concrete foundation by a large crane.

Both styles are commonly referred to as factory-built housing, but that term's technical use is restricted to a class of homes regulated by the Federal National Mfd. Housing Construction and Safety Standards Act of 1974.

Most zoning restrictions on the homes have been found to be inapplicable or only applicable to modular homes. That occurs often after considerable litigation on the topic by affected jurisdictions and by plaintiffs failing to ascertain the difference. Most modern modulars, once fully assembled, are indistinguishable from site-built homes. Their roofs are usually transported as separate units. Newer modulars also come with roofs that can be raised during the setting process with cranes. There are also modulars with 2 to 4 storeys.

Gallery

[edit]

Construction starts with the frame.

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Construction starts with the frame.
Interior wall assemblies are attached.

○

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Interior wall assemblies are attached.
Roof assembly is set atop home.

○

Image not found or type unknown
Roof assembly is set atop home.
Drywall is completed.

○

Image not found or type unknown
Drywall is completed.
Home is ready for delivery to site.

○

Image not found or type unknown
Home is ready for delivery to site.

- A modern "triple wide" home, designed to look like an adobe home

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  A modern "triple wide"
  home, designed to look like
  an adobe home
  A mobile home is being moved, California.

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  is being moved,
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- A mobile home being prepared for transport

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  A mobile home being
  prepared for transport

See also

[edit]

- Image not found or type unknown Housing portal
- All Parks Alliance for Change
- Campervan
- Construction trailer
- Houseboat
- Manufactured housing
- Modular home
- Motorhome
- Nomadic wagons

- Recreational vehicle
- Reefer container housing units
- Small house movement
- Trailer (vehicle)
- Trailer Park Boys
- Trailer trash
- Vardo
- Prefabricated home

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External links

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

- Regulating body in the UK
- US Federal Manufactured Home Construction and Safety Standards

About Sick building syndrome

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Sick building syndrome

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Sick building syndrome (**SBS**) is a condition in which people develop symptoms of illness or become infected with chronic disease from the building in which they work or reside.[1] In scientific literature, SBS is also known as **building-related illness (BRI)**, **building-related symptoms (BRS)**, or **idiopathic environmental intolerance (IEI)**.

The main identifying observation is an increased incidence of complaints of such symptoms as headache, eye, nose, and throat irritation, fatigue, dizziness, and nausea. The 1989 Oxford English Dictionary defines SBS in that way.[2] The World Health Organization created a 484-page tome on indoor air quality 1984, when SBS was attributed only to non-organic causes, and suggested that the book might form a basis for legislation or litigation.[3]

The outbreaks may or may not be a direct result of inadequate or inappropriate cleaning.[2] SBS has also been used to describe staff concerns in post-war buildings with faulty building aerodynamics, construction materials, construction process, and maintenance.[2] Some symptoms tend to increase in severity with the time people spend in the building, often improving or even disappearing when people are away from the building.[2][4] The term *SBS* is also used interchangeably with "**building-related symptoms**", which orients the name of the condition around patients' symptoms rather than a "sick" building.[5]

Attempts have been made to connect sick building syndrome to various causes, such as contaminants produced by outgassing of some building materials, volatile organic compounds (VOC), improper exhaust ventilation of ozone (produced by the operation of some office machines), light industrial chemicals used within, and insufficient fresh-air intake or air filtration (*see* "Minimum efficiency reporting value").[2] Sick building syndrome has also been attributed to heating, ventilation, and air conditioning (HVAC) systems, an attribution about which there are inconsistent findings.[6]

Signs and symptoms

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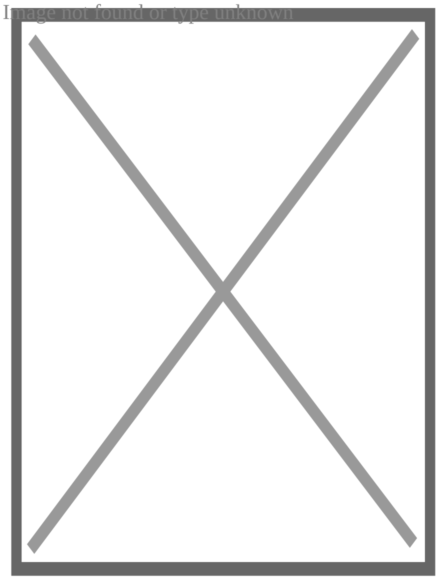

An air quality monitor

Human exposure to aerosols has a variety of adverse health effects.[7] Building occupants complain of symptoms such as sensory irritation of the eyes, nose, or throat; neurotoxic or general health problems; skin irritation; nonspecific hypersensitivity reactions; infectious diseases;[8] and odor and taste sensations.[9] Poor lighting has caused general malaise.[10]

Extrinsic allergic alveolitis has been associated with the presence of fungi and bacteria in the moist air of residential houses and commercial offices.[11] A study in 2017 correlated several inflammatory diseases of the respiratory tract with objective evidence of damp-caused damage in homes.[12]

The WHO has classified the reported symptoms into broad categories, including mucous-membrane irritation (eye, nose, and throat irritation), neurotoxic effects (headaches, fatigue, and irritability), asthma and asthma-like symptoms (chest tightness and wheezing), skin dryness and irritation, and gastrointestinal complaints.[13]

Several sick occupants may report individual symptoms that do not seem connected. The key to discovery is the increased incidence of illnesses in general with onset or exacerbation in a short period, usually weeks. In most cases, SBS symptoms are relieved soon after the occupants leave the particular room or zone.[14] However, there can be lingering effects of various neurotoxins, which may not clear up when the occupant leaves the building. In some cases, including those of sensitive people, there are long-term health effects.[15]

Cause

[edit]

ASHRAE has recognized that polluted urban air, designated within the United States Environmental Protection Agency (EPA)'s air quality ratings as unacceptable, requires the installation of treatment such as filtration for which the HVAC practitioners generally apply carbon-impregnated filters and their likes. Different toxins will aggravate the human body in different ways. Some people are more allergic to mold, while others are highly sensitive to dust. Inadequate ventilation will exaggerate small problems (such as deteriorating fiberglass insulation or cooking fumes) into a much more serious indoor air quality problem.[10]

Common products such as paint, insulation, rigid foam, particle board, plywood, duct liners, exhaust fumes and other chemical contaminants from indoor or outdoor sources, and biological contaminants can be trapped inside by the HVAC AC system. As this air is recycled using fan coils the overall oxygenation ratio drops and becomes harmful. When combined with other stress factors such as traffic noise and poor lighting, inhabitants of buildings located in a polluted urban area can quickly become ill as their immune system is overwhelmed.[10]

Certain VOCs, considered toxic chemical contaminants to humans, are used as adhesives in many common building construction products. These aromatic carbon rings / VOCs can cause acute and chronic health effects in the occupants of a building, including cancer, paralysis, lung failure, and others. Bacterial spores, fungal spores, mold spores, pollen, and viruses are types of biological contaminants and can all cause allergic reactions or illness described as SBS. In addition, pollution from outdoors, such as motor vehicle exhaust, can enter buildings, worsen indoor air quality, and increase the indoor concentration of carbon monoxide and carbon dioxide.[16] Adult SBS symptoms were associated with a history of allergic rhinitis, eczema and asthma.[17]

A 2015 study concerning the association of SBS and indoor air pollutants in office buildings in Iran found that, as carbon dioxide increased in a building, nausea, headaches, nasal irritation, dyspnea, and throat dryness also rose.[10] Some work conditions have been correlated with specific symptoms: brighter light, for example was significantly related to skin dryness, eye pain, and malaise.[10] Higher temperature is correlated with sneezing, skin redness, itchy eyes, and headache; lower relative humidity has been associated with sneezing, skin redness, and eye pain.[10]

In 1973, in response to the oil crisis and conservation concerns, ASHRAE Standards 62-73 and 62-81 reduced required ventilation from 10 cubic feet per minute (4.7 L/s) per person to 5 cubic feet per minute (2.4 L/s) per person, but this was found to be a contributing factor to sick building syndrome.[18] As of the 2016 revision, ASHRAE ventilation standards call for 5 to 10 cubic feet per minute of ventilation per occupant (depending on the occupancy type) in addition to ventilation based on the zone floor area delivered to the breathing zone.[19]

Workplace

[edit]

Excessive work stress or dissatisfaction, poor interpersonal relationships and poor communication are often seen to be associated with SBS, recent[*when?*] studies show that a combination of environmental sensitivity and stress can greatly contribute to sick building syndrome.[15][*citation needed*]

Greater effects were found with features of the psycho-social work environment including high job demands and low support. The report concluded that the physical environment of office buildings appears to be less important than features of the psycho-social work environment in explaining differences in the prevalence of symptoms. However, there is still a relationship between sick building syndrome and symptoms of workers regardless of workplace stress.[20]

Specific work-related stressors are related with specific SBS symptoms. Workload and work conflict are significantly associated with general symptoms (headache, abnormal tiredness, sensation of cold or nausea). While crowded workspaces and low work satisfaction are associated with upper respiratory symptoms.[21] Work productivity has been associated with ventilation rates, a contributing factor to SBS, and there's a significant increase in production as ventilation rates increase, by 1.7% for every two-fold increase of ventilation rate.[22] Printer effluent, released into the office air as ultra-fine particles (UFPs) as toner is burned during the printing process, may lead to certain SBS symptoms.[23][24] Printer effluent may contain a variety of toxins to which a subset of office workers are sensitive, triggering SBS symptoms.[25]

Specific careers are also associated with specific SBS symptoms. Transport, communication, healthcare, and social workers have highest prevalence of general symptoms. Skin symptoms such as eczema, itching, and rashes on hands and face are associated with technical work. Forestry, agriculture, and sales workers have the lowest rates of sick building syndrome symptoms.[26]

From the assessment done by Fisk and Mudarri, 21% of asthma cases in the United States were caused by wet environments with mold that exist in all indoor environments, such as schools, office buildings, houses and apartments. Fisk and Berkeley Laboratory colleagues also found that the exposure to the mold increases the chances of respiratory issues by 30 to 50 percent.[27] Additionally, studies showing that health effects with dampness and mold in indoor environments found that increased risk of adverse health effects occurs with dampness or visible mold environments.[28]

Milton et al. determined the cost of sick leave specific for one business was an estimated $480 per employee, and about five days of sick leave per year could be attributed to low ventilation rates. When comparing low ventilation rate areas of the building to higher ventilation rate areas, the relative risk of short-term sick leave was 1.53 times greater in the low ventilation areas.[29]

Home

[edit]

Sick building syndrome can be caused by one's home. Laminate flooring may release more SBS-causing chemicals than do stone, tile, and concrete floors.[17] Recent redecorating and new furnishings within the last year are associated with increased symptoms; so are dampness and related factors, having pets, and cockroaches.[17] Mosquitoes are related to more symptoms, but it is unclear whether the immediate cause of the symptoms is the mosquitoes or the repellents used against them.[17]

Mold

[edit]
Main article: Mold health issues

Sick building syndrome may be associated with indoor mold or mycotoxin contamination. However, the attribution of sick building syndrome to mold is controversial and supported by little evidence.[30][31][32]

Indoor temperature

[edit]
Main article: Room temperature § Health effects

Indoor temperature under 18 °C (64 °F) has been shown to be associated with increased respiratory and cardiovascular diseases, increased blood levels, and increased hospitalization.[33]

Diagnosis

[edit]

While sick building syndrome (SBS) encompasses a multitude of non-specific symptoms, building-related illness (BRI) comprises specific, diagnosable symptoms caused by certain agents (chemicals, bacteria, fungi, etc.). These can typically be identified, measured, and quantified.[34] There are usually four causal agents in BRi: immunologic, infectious, toxic, and irritant.[34] For instance, Legionnaire's disease, usually caused by *Legionella pneumophila*, involves a specific organism which could be ascertained through clinical findings as the source of contamination within a building.[34]

Prevention

[edit]

- Reduction of time spent in the building
- If living in the building, moving to a new place
- Fixing any deteriorated paint or concrete deterioration
- Regular inspections to indicate for presence of mold or other toxins
- Adequate maintenance of all building mechanical systems
- Toxin-absorbing plants, such as sansevieria[35][36][37][38][39][40][41][*excessive citations*
- Roof shingle non-pressure cleaning for removal of algae, mold, and *Gloeocapsa magma*
- Using ozone to eliminate the many sources, such as VOCs, molds, mildews, bacteria, viruses, and even odors. However, numerous studies identify high-ozone shock treatment as ineffective despite commercial popularity and popular belief.
- Replacement of water-stained ceiling tiles and carpeting
- Only using paints, adhesives, solvents, and pesticides in well-ventilated areas or only using these pollutant sources during periods of non-occupancy
- Increasing the number of air exchanges; the American Society of Heating, Refrigeration and Air-Conditioning Engineers recommend a minimum of 8.4 air exchanges per 24-hour period
- Increased ventilation rates that are above the minimum guidelines[22]
- Proper and frequent maintenance of HVAC systems
- UV-C light in the HVAC plenum
- Installation of HVAC air cleaning systems or devices to remove VOCs and bioeffluents (people odors)
- Central vacuums that completely remove all particles from the house including the ultrafine particles (UFPs) which are less than 0.1 ?m
- Regular vacuuming with a HEPA filter vacuum cleaner to collect and retain 99.97% of particles down to and including 0.3 micrometers

- Placing bedding in sunshine, which is related to a study done in a high-humidity area where damp bedding was common and associated with SBS[17]
- Lighting in the workplace should be designed to give individuals control, and be natural when possible[42]
- Relocating office printers outside the air conditioning boundary, perhaps to another building
- Replacing current office printers with lower emission rate printers[43]
- Identification and removal of products containing harmful ingredients

Management

[edit]

SBS, as a non-specific blanket term, does not have any specific cause or cure. Any known cure would be associated with the specific eventual disease that was cause by exposure to known contaminants. In all cases, alleviation consists of removing the affected person from the building associated. BRI, on the other hand, utilizes treatment appropriate for the contaminant identified within the building (e.g., antibiotics for Legionnaire's disease).[*citation needed*]

Improving the indoor air quality (IAQ) of a particular building can attenuate, or even eliminate, the continued exposure to toxins. However, a Cochrane review of 12 mold and dampness remediation studies in private homes, workplaces and schools by two independent authors were deemed to be very low to moderate quality of evidence in reducing adult asthma symptoms and results were inconsistent among children.[44] For the individual, the recovery may be a process involved with targeting the acute symptoms of a specific illness, as in the case of mold toxins.[45] Treating various building-related illnesses is vital to the overall understanding of SBS. Careful analysis by certified building professionals and physicians can help to identify the exact cause of the BRI, and help to illustrate a causal path to infection. With this knowledge one can, theoretically, remediate a building of contaminants and rebuild the structure with new materials. Office BRI may more likely than not be explained by three events: "Wide range in the threshold of response in any population (susceptibility), a spectrum of response to any given agent, or variability in exposure within large office buildings."[46]

Isolating any one of the three aspects of office BRI can be a great challenge, which is why those who find themselves with BRI should take three steps, history, examinations, and interventions. History describes the action of continually monitoring and recording the health of workers experiencing BRI, as well as obtaining records of previous building alterations or related activity. Examinations go hand in hand with monitoring employee health. This step is done by physically examining the entire workspace and evaluating possible threats to health status among employees. Interventions follow accordingly based on the results of the Examination and History report.[46]

Epidemiology

[edit]

Some studies have found that women have higher reports of SBS symptoms than men.[17][10] It is not entirely clear, however, if this is due to biological, social, or occupational factors.

A 2001 study published in the Journal Indoor Air, gathered 1464 office-working participants to increase the scientific understanding of gender differences under the Sick Building Syndrome phenomenon.[47] Using questionnaires, ergonomic investigations, building evaluations, as well as physical, biological, and chemical variables, the investigators obtained results that compare with past studies of SBS and gender. The study team found that across most test variables, prevalence rates were different in most areas, but there was also a deep stratification of working conditions between genders as well. For example, men's workplaces tend to be significantly larger and have all-around better job characteristics. Secondly, there was a noticeable difference in reporting rates, specifically that women have higher rates of reporting roughly 20% higher than men. This information was similar to that found in previous studies, thus indicating a potential difference in willingness to report.[47]

There might be a gender difference in reporting rates of sick building syndrome, because women tend to report more symptoms than men do. Along with this, some studies have found that women have a more responsive immune system and are more prone to mucosal dryness and facial erythema. Also, women are alleged by some to be more exposed to indoor environmental factors because they have a greater tendency to have clerical jobs, wherein they are exposed to unique office equipment and materials (example: blueprint machines, toner-based printers), whereas men often have jobs based outside of offices.[48]

History

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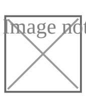

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In the late 1970s, it was noted that nonspecific symptoms were reported by tenants in newly constructed homes, offices, and nurseries. In media it was called "office illness". The term "sick building syndrome" was coined by the WHO in 1986, when they also estimated that 10–30% of newly built office buildings in the West had indoor air problems. Early Danish and British studies reported symptoms.

Poor indoor environments attracted attention. The Swedish allergy study (SOU 1989:76) designated "sick building" as a cause of the allergy epidemic as was feared. In the 1990s, therefore, extensive research into "sick building" was carried out. Various physical and chemical factors in the buildings were examined on a broad front.

The problem was highlighted increasingly in media and was described as a "ticking time bomb". Many studies were performed in individual buildings.

In the 1990s "sick buildings" were contrasted against "healthy buildings". The chemical contents of building materials were highlighted. Many building material manufacturers were actively working to gain control of the chemical content and to replace criticized additives. The ventilation industry advocated above all more well-functioning ventilation. Others perceived ecological construction, natural materials, and simple techniques as a solution.

At the end of the 1990s came an increased distrust of the concept of "sick building". A dissertation at the Karolinska Institute in Stockholm 1999 questioned the methodology of previous research, and a Danish study from 2005 showed these flaws experimentally. It was suggested that sick building syndrome was not really a coherent syndrome and was not a disease to be individually diagnosed, but a collection of as many as a dozen semi-related diseases. In 2006 the Swedish National Board of Health and Welfare recommended in the medical journal *Läkartidningen* that "sick building syndrome" should not be used as a clinical diagnosis. Thereafter, it has become increasingly less common to use terms such as *sick buildings* and *sick building syndrome* in research. However, the concept remains alive in popular culture and is used to designate the set of symptoms related to poor home or work environment engineering. *Sick building* is therefore an expression used especially in the context of workplace health.

Sick building syndrome made a rapid journey from media to courtroom where professional engineers and architects became named defendants and were represented by their respective professional practice insurers. Proceedings invariably relied on expert witnesses, medical and technical experts along with building managers, contractors and manufacturers of finishes and furnishings, testifying as to cause and effect. Most of these actions resulted in sealed settlement agreements, none of these being dramatic. The insurers needed a defense based upon Standards of Professional Practice to meet a court decision that declared that in a modern, essentially sealed building, the HVAC systems must produce breathing air for suitable human consumption. ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers, currently with over 50,000 international members) undertook the task of codifying its indoor air quality (IAQ) standard.

ASHRAE empirical research determined that "acceptability" was a function of outdoor (fresh air) ventilation rate and used carbon dioxide as an accurate measurement of occupant presence and activity. Building odors and contaminants would be suitably controlled by this dilution methodology. ASHRAE codified a level of 1,000 ppm of carbon dioxide and specified the use of widely available sense-and-control equipment to assure compliance. The 1989 issue of ASHRAE 62.1-1989 published the whys and wherefores and overrode the 1981 requirements that were aimed at a ventilation level of 5,000 ppm of carbon dioxide (the OSHA workplace limit), federally set to minimize HVAC system energy consumption. This apparently ended the SBS epidemic.

Over time, building materials changed with respect to emissions potential. Smoking vanished and dramatic improvements in ambient air quality, coupled with code compliant ventilation and maintenance, per ASHRAE standards have all contributed to the acceptability of the indoor air environment.[49][50]

See also

[edit]

- Aerotoxic syndrome
- Air purifier
- Asthmagen
- Cleanroom
- Electromagnetic hypersensitivity
- Havana syndrome
- Healthy building
- Indoor air quality
- Lead paint
- Multiple chemical sensitivity
- NASA Clean Air Study
- Nosocomial infection
- Particulates
- Power tools
- Renovation
- Somatization disorder
- Fan death

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External links

[edit]

- Best Practices for Indoor Air Quality when Remodeling Your Home, US EPA
- Renovation and Repair, Part of Indoor Air Quality Design Tools for Schools, US EPA
- Addressing Indoor Environmental Concerns During Remodeling, US EPA
- Dust FAQs, UK HSE Archived 2023-03-20 at the Wayback Machine
- CCOHS: Welding - Fumes And Gases | Health Effect of Welding Fumes

Classification	**MeSH**: D018877 D
External resources	**Patient UK**: Sick building syndrome

- 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

- 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

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

Employment

Classifications	◦ Academic tenure
	◦ Casual
	◦ Contingent work
	◦ Full-time job
	◦ Gig worker
	◦ Job sharing
	◦ Part-time job
	◦ Self-employment
	◦ Side job
	◦ Skilled worker
	    ◦ Journeyman
	    ◦ Technician
	    ◦ Tradesperson
	◦ Independent contractor
	◦ Labour hire
	◦ Temporary work
	◦ Laborer
	◦ Wage labour

Hiring	◦ Application ◦ Background check ◦ Business networking ◦ Cover letter ◦ Curriculum vitae ◦ Drug testing ◦ Employment contract ◦ Employment counsellor ◦ Executive search ◦ list ◦ Induction programme ◦ Job fair ◦ Job fraud ◦ Job hunting ◦ Job interview ◦ Letter of recommendation ◦ Onboarding ◦ Overqualification ◦ Person–environment fit ◦ Personality–job fit theory ◦ Personality hire ◦ Probation ◦ Realistic job preview ◦ Recruitment ◦ Résumé ◦ Simultaneous recruiting of new graduates ◦ Underemployment ◦ Work-at-home scheme
Roles	◦ Cooperative ◦ Employee ◦ Employer ◦ Internship ◦ Job ◦ Labour hire ◦ Permanent employment ◦ Supervisor ◦ Volunteering

Working class	◦ Blue-collar ◦ Green-collar ◦ Grey-collar ◦ Pink-collar ◦ Precariat ◦ White-collar ◦ Red-collar ◦ New-collar ◦ No-collar ◦ Orange-collar ◦ Scarlet-collar ◦ Black-collar ◦ Gold-collar

Career and training

- Apprenticeship
- Artisan
  - Master craftsman
- Avocation
- Career assessment
- Career counseling
- Career development
- Coaching
- Creative class
- Education
  - Continuing education
  - E-learning
  - Employability
  - Further education
  - Graduate school
  - Induction training
  - Knowledge worker
  - Licensure
  - Lifelong learning
  - Overspecialization
  - Practice-based professional learning
  - Professional association
  - Professional certification
  - Professional development
  - Professional school
  - Reflective practice
  - Retraining
  - Vocational education
  - Vocational school
  - Vocational university
- Mentorship
- Occupational Outlook Handbook
- Practice firm
- Profession
  - Operator
  - Professional
- Tradesman
- Vocation

Attendance	◦ Break ◦ Break room ◦ Career break ◦ Furlough ◦ Gap year ◦ Leave of absence ◦ Long service leave ◦ No call, no show ◦ Sabbatical ◦ Sick leave ◦ Time clock
Schedules	◦ 35-hour workweek ◦ Four-day week ◦ Eight-hour day ◦ 996 working hour system ◦ Flextime ◦ On-call ◦ Overtime ◦ Remote work ◦ Six-hour day ◦ Shift work ◦ Working time ◦ Workweek and weekend

Wages and salaries	◦ Income bracket
	◦ Income tax
	◦ Living wage
	◦ Maximum wage
	◦ National average salary
	    ◦ World
	    ◦ Europe
	◦ Minimum wage
	    ◦ Canada
	    ◦ Hong Kong
	    ◦ Europe
	    ◦ United States
	◦ Progressive wage
	    ◦ Singapore
	◦ Overtime rate
	◦ Paid time off
	◦ Performance-related pay
	◦ Salary cap
	◦ Wage compression
	◦ Working poor

Benefits	◦ Annual leave ◦ Casual Friday ◦ Child care ◦ Disability insurance ◦ Health insurance ◦ Life insurance ◦ Marriage leave ◦ Parental leave ◦ Pension ◦ Sick leave ◦ United States ◦ Take-home vehicle

Safety and health	◦ Crunch
	◦ Epilepsy and employment
	◦ Human factors and ergonomics
	◦ Karoshi
	◦ List of countries by rate of fatal workplace accidents
	◦ Occupational burnout
	◦ Occupational disease
	◦ Occupational exposure limit
	◦ Occupational health psychology
	◦ Occupational injury
	◦ Occupational noise
	◦ Occupational stress
	◦ Personal protective equipment
	◦ Repetitive strain injury
	◦ Right to sit
	    ◦ United States
	◦ Sick building syndrome
	◦ Work accident
	    ◦ Occupational fatality
	◦ Workers' compensation
	◦ Workers' right to access the toilet
	◦ Workplace health promotion
	◦ Workplace phobia
	◦ Workplace wellness

Equal opportunity	◦ Affirmative action ◦ Equal pay for equal work ◦ Gender pay gap ◦ Glass ceiling

Infractions

- Corporate collapses and scandals
  - Accounting scandals
  - Control fraud
  - Corporate behaviour
  - Corporate crime
- Discrimination
- Exploitation of labour
- Dress code
- Employee handbook
- Employee monitoring
- Evaluation
- Labour law
- Sexual harassment
- Sleeping while on duty
- Wage theft
- Whistleblower
- Workplace bullying
- Workplace harassment
- Workplace incivility

Willingness

- Boreout
- Careerism
- Civil conscription
- Conscription
- Critique of work
- Dead-end job
- Job satisfaction
- McJob
- Organizational commitment
- Refusal of work
- Slavery
  - Bonded labour
  - Human trafficking
  - Labour camp
  - Penal labour
  - Peonage
  - Truck wages
  - Unfree labour
  - Wage slavery
- Work ethic
- Work–life interface
  - Downshifting
  - Slow living
- Workaholic

Termination	- At-will employment
	- Dismissal
	    - Banishment room
	    - Constructive dismissal
	    - Wrongful dismissal
	- Employee offboarding
	- Exit interview
	- Layoff
	- Notice period
	- Pink slip
	- Resignation
	    - Letter of resignation
	- Restructuring
	- Retirement
	    - Mandatory retirement
	    - Retirement age
	    - Retirement planning
	- Severance package
	    - Golden handshake
	    - Golden parachute
	- Turnover

Unemployment	- Barriers to entry
	- Discouraged worker
	- Economic depression
	    - Great Depression
	    - Long Depression
	- Frictional unemployment
	- Full employment
	- Graduate unemployment
	- Involuntary unemployment
	- Jobless recovery
	- Phillips curve
	- Recession
	    - Great Recession
	    - Job losses caused by the Great Recession
	    - Lists of recessions
	    - Recession-proof job
	- Reserve army of labour
	- Structural unemployment
	- Technological unemployment
	- Types of unemployment
	- Unemployment benefits
	- Unemployment Convention, 1919
	- Unemployment extension
	- List of countries by unemployment rate
	- Employment-to-population ratio
	    - List
	- Wage curve
	- Youth unemployment
	- Workfare
	- Unemployment insurance

Public programs	- Make-work job - Job creation program - Job creation index - Job guarantee - Employer of last resort - Guaranteed minimum income - Right to work - *Historical:* - *U.S.A.:* - Civil Works Administration - Works Progress Administration

Comprehensive Employment and Training Act

See also

- Bullshit job
- Busy work
- Credentialism and educational inflation
- Emotional labor
- Evil corporation
- Going postal
- Kiss up kick down
- Labor rights
- Make-work job
- Narcissism in the workplace
- Post-work society
- Presenteeism
- Psychopathy in the workplace
- Sunday scaries
- Slow movement (culture)
- Toxic leader
- Toxic workplace
- Workhouse

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- Aspects of corporations
- Aspects of jobs
- Aspects of occupations
- Aspects of organizations
- Aspects of workplaces
- Corporate titles
- Critique of work
- Organized labor

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- Japan
- Czech Republic
- Israel

About Durham Supply Inc

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Things To Do in Oklahoma County

Photo

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Bricktown Water Taxi

4.7 (2568)

Photo

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Museum of Osteology

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Photo

National Cowboy & Western Heritage Museum

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Oklahoma Railway Museum

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Centennial Land Run Monument

4.8 (811)

Photo

Beavers Bend State Park and Nature Center

4.7 (4483)

Driving Directions in Oklahoma County

Driving Directions From Oklahoma City to Durham Supply Inc

Driving Directions From Deja Vu Showgirls OKC - Oklahoma Strip Club to Durham Supply Inc

Driving Directions From Bob Moore Ford to Durham Supply Inc

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

https://www.google.com/maps/dir/Deja+Vu+Showgirls+OKC+-+Oklahoma+Strip+Club/Durham+Supply+Inc/@35.4058811,-97.4845607,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sChIJ-WY-lTMUsocR5E21Jdk78Og!2m2!1d-97.4845607!2d35.4058811!1m5!1m1!1sChIJCUnZ1UoUsocRpJXqm8cX514!2m2!1d-97.4774449!2d35.3963954!3e0

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Driving Directions From Oklahoma State Capitol to Durham Supply Inc

Driving Directions From Oklahoma City Museum of Art to Durham Supply Inc

Driving Directions From Route 66 Park to Durham Supply Inc

Driving Directions From Route 66 Park to Durham Supply Inc

Driving Directions From Route 66 Park to Durham Supply Inc

Driving Directions From Bricktown Water Taxi to Durham Supply Inc

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Reviews for Durham Supply Inc

Durham Supply Inc

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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

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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 ?

Durham Supply Inc

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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

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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

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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.

Evaluating Costs of Upgrading Mobile Home AC Systems**View GBP**

Frequently Asked Questions

What factors influence the cost of upgrading an AC system in a mobile home?

The main factors include the size and type of the new unit, installation complexity, any necessary ductwork modifications, labor costs, and regional pricing variations.

How can I determine if my current mobile home AC system needs an upgrade?

Indicators include frequent repairs, inability to maintain desired temperatures, high energy bills, or if your system is over 10-15 years old. An HVAC professional can provide a thorough assessment.

Are there cost-effective options for upgrading my mobile home AC system?

Yes, consider energy-efficient units that offer rebates or tax incentives. Also, mini-split systems may be more affordable than traditional central air systems for smaller spaces.

What is the typical price range for upgrading a mobile home AC system?

Costs typically range from $1,500 to $6,000 depending on the type of unit and extent of installation work required.

Can I install a new AC unit in my mobile home myself to save on costs?

While DIY installation can reduce upfront expenses, it is generally not recommended due to potential safety hazards and risks of improper installation. Professional installation ensures efficiency and often includes warranties.

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State : OK

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

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