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Comparing Credit Requirements for Mobile Home HVAC Financing

Overview of HVAC needs specific to mobile homes

When it comes to financing HVAC systems for mobile homes, one of the crucial considerations is understanding the various credit requirements associated with different financing options. Mobile home owners often face unique challenges due to the nature of their residence, which can impact the availability and terms of financing solutions for essential upgrades like HVAC systems. Therefore, comparing credit requirements becomes an essential step in choosing the most suitable financing option.

Ductless mini-splits provide flexible options for mobile home climate control **hvac mobile home** knowledge.

One common avenue for financing mobile home HVAC systems is through personal loans. These loans typically require a fair to good credit score, usually starting from around 600 or higher. Lenders assess creditworthiness based on several factors such as payment history, current debt levels, and income stability. The advantage of personal loans lies in their flexibility; they can be used for a variety of purposes, including home improvements. However, interest rates may vary significantly depending on one's credit profile, with lower scores potentially attracting higher rates.

Another option is manufacturer or dealer financing. This type of financing is often directly offered by HVAC manufacturers or dealers who partner with financial institutions to provide tailored loan products to buyers. Credit requirements here can be more lenient than traditional bank loans because these arrangements are designed to boost sales volume for manufacturers and dealers. Nevertheless, having a decent credit score remains beneficial as it could lead to better interest rates and terms.

Home equity loans or lines of credit (HELOCs) represent another viable option but are generally applicable only if the mobile home owner owns both the home and the land it sits

on-often referred to as real property status. These loans are secured against the equity in one's property and typically offer lower interest rates compared to unsecured loans because they pose less risk for lenders. As such, lenders might have stringent credit requirements along with demands for substantial equity in your property.

For those who may have difficulty qualifying through conventional methods due to poor or limited credit history, there are specialized lenders that cater specifically to mobile home improvements. These institutions might consider alternative criteria beyond traditional credit scores when assessing applications-such as steady employment history or proof of ability to repay-providing opportunities even for those with sub-prime scores.

Lastly, government-backed programs like FHA Title I loans could also serve as potential avenues since they do not explicitly require excellent credit scores but do necessitate that borrowers demonstrate financial reliability through other means such as consistent income streams.

In conclusion, while each financing option presents its own set of benefits and constraints concerning credit requirements, understanding them allows homeowners to align their choices with their financial capabilities and needs effectively. By evaluating these options carefully and perhaps seeking professional advice where necessary, mobile home owners can secure optimal solutions that facilitate comfortable living environments without unnecessary financial strain.

When it comes to financing a heating, ventilation, and air conditioning (HVAC) system for a mobile home, understanding the key credit requirements is essential. The need for efficient climate control in mobile homes is undeniable, given their unique construction and insulation characteristics. However, securing financing for an HVAC system can be influenced significantly by one's credit profile. This essay explores the pivotal credit requirements and compares them across different lenders.

First and foremost, a potential borrower's credit score plays a crucial role in determining eligibility for HVAC financing. Typically, lenders look for a minimum credit score that ranges from 620 to 680. A higher score often translates into more favorable terms such as lower interest rates or reduced fees. Conversely, those with lower scores might still find options but should expect less advantageous terms.

In addition to the credit score, lenders also examine the applicant's debt-to-income (DTI) ratio. This ratio measures the applicant's total monthly debt payments against their gross monthly income and provides insight into their ability to manage additional debts responsibly. Ideally, lenders prefer a DTI ratio below 36%, though some may accept up to 43% depending on other factors.

Another critical requirement is the borrower's credit history length. Lenders favor applicants who have established credit over several years as it demonstrates their experience in managing loans effectively over time. Those with shorter histories might face challenges but could leverage other strengths like stable income or collateral.

Moreover, specific types of mobile home HVAC financing options may cater to different credit profiles. For instance, personal loans are generally more flexible with respect to credit requirements compared to specialized home improvement loans that might mandate stricter criteria due to their secured nature.

Comparing these requirements across various lenders reveals both subtle differences and commonalities. Traditional banks often uphold stringent standards given their risk-averse nature whereas online lenders might offer more lenient conditions albeit possibly at higher rates. Credit unions represent another avenue where members might benefit from personalized service and potentially softer requirements.

Ultimately, when navigating mobile home HVAC financing options, prospective borrowers should thoroughly research each lender's criteria while considering their own financial standing comprehensively. Improving one's credit score prior to application or opting for co-signers could enhance approval chances significantly.

In conclusion, understanding key credit requirements is fundamental for individuals seeking mobile home HVAC financing. By comparing these requirements across different lending institutions-taking into account factors like credit scores, DTI ratios, and historical financial behavior-borrowers can better position themselves within this competitive landscape ensuring successful acquisition of necessary funding tailored towards improving comfort in their living spaces efficiently yet affordably.

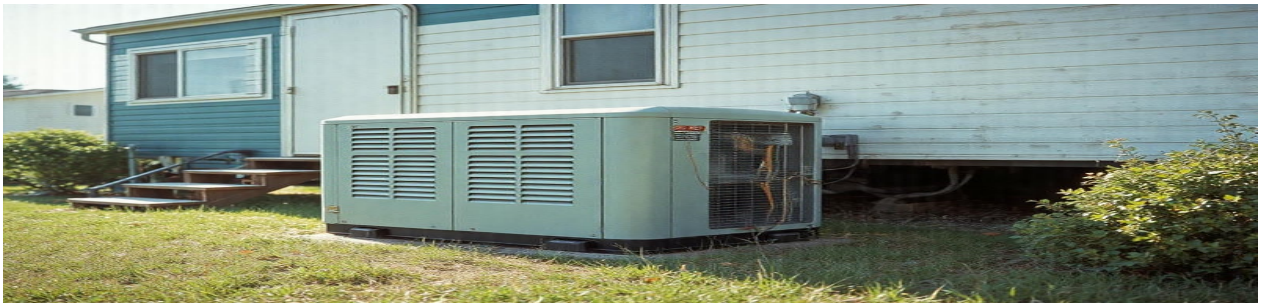
Affordable Payment Plans for Upgrading Mobile Home AC Systems



Choosing the right payment plan for upgrading your mobile home AC system is a crucial decision that can significantly impact your financial stability and comfort at home.. With numerous options available, it's essential to consider several factors to ensure you select a plan that aligns with your needs and budget. Firstly, assess your financial situation.

Posted by on 2024-12-30

Aligning Equipment Compatibility with Financing Options in Mobile Homes



In the dynamic world of mobile homes, aligning equipment compatibility with financing options is a crucial element that can significantly impact the success of any project.. The process involves ensuring that the equipment used in mobile home construction or renovation is not only technically suitable but also financially feasible.

Posted by on 2024-12-30

Benefits of Payment Plans Tailored for Mobile Home HVAC Upgrades



When contemplating upgrades to your mobile home's HVAC system, choosing the right payment plan is as crucial as selecting the equipment itself. As energy efficiency and comfort become increasingly important, many homeowners are considering tailored payment plans that make these enhancements more accessible.

Posted by on 2024-12-30

Understanding Financing Options for Mobile Home HVAC

When it comes to financing the installation or replacement of HVAC systems in mobile homes, understanding the differences between traditional and specialized lenders is crucial. Both types of lenders offer distinct advantages and challenges based on their credit criteria, and choosing the right one can significantly affect the financial outcome for homeowners.

Traditional lenders, such as banks and credit unions, typically have stringent credit requirements. These institutions often prioritize borrowers with established credit histories, higher credit scores, stable income sources, and substantial collateral. Their risk-averse nature ensures that they lend to customers who present a lower risk of default. As a result,

borrowers who meet these criteria can benefit from lower interest rates and more favorable loan terms. However, this also means that individuals with poor or limited credit histories may find it challenging to secure financing through traditional channels.

On the other hand, specialized lenders cater specifically to niche markets like mobile home HVAC financing. These lenders understand the unique challenges associated with mobile homes and may offer more flexible credit criteria compared to traditional institutions. Specialized lenders are often more willing to work with individuals who have non-traditional income sources or less-than-perfect credit scores. They tend to assess applications on a broader spectrum of factors beyond just conventional metrics-such as employment history or recent financial improvements-which provides an opportunity for those who might not fit into the rigid frameworks of traditional lending.

Despite their flexibility, specialized lenders can come with drawbacks. The increased risk they assume by accepting borrowers with weaker credit profiles is often offset by charging higher interest rates or imposing stricter repayment terms than those offered by traditional lenders. Therefore, while these loans might be more accessible initially, they could potentially lead to higher overall costs for homeowners over time.

In summary, comparing traditional and specialized lenders in terms of their credit criteria reveals a trade-off between accessibility and cost-effectiveness. Traditional lenders offer lower interest rates but maintain high entry barriers due to their strict requirements. Conversely, specialized lenders provide greater accessibility at potentially higher costs due to their willingness to accommodate diverse financial situations. Homeowners seeking HVAC financing for mobile homes should carefully evaluate their own financial circumstances and long-term goals before choosing a lender that best suits their needs.





Explanation of common financing packages available

When considering financing options for a new HVAC system, particularly in mobile homes, understanding the impact of credit scores on loan terms and interest rates is crucial. HVAC systems are essential for maintaining comfort and livability, especially in mobile homes where insulation and temperature control can be more challenging. However, securing financing for

such an installation can be significantly influenced by one's credit score.

Credit scores are numerical representations of a person's creditworthiness, reflecting their likelihood of repaying borrowed money. These scores, typically ranging from 300 to 850, are used by lenders to assess risk. Generally, higher credit scores indicate lower risk to lenders and thus result in more favorable loan terms. This principle holds true across most types of lending, including HVAC financing for mobile homes.

For individuals with excellent credit scores (usually above 750), lenders are likely to offer loans with lower interest rates and more flexible repayment terms. This is because these borrowers have demonstrated reliability in managing debt effectively over time. As a result, they may have access to promotional offers or special financing deals that can significantly reduce the cost of borrowing.

Conversely, those with poor credit scores (below 600) might face higher interest rates and less favorable terms due to perceived increased risk by lenders. In some cases, they may also encounter difficulty obtaining any financing without providing additional collateral or having a co-signer. This scenario often leads to increased financial strain as the cost of borrowing becomes substantially higher.

Mobile home residents might face unique challenges when seeking HVAC financing due to the specific nature of their housing situation. Mobile homes sometimes carry stigmas regarding depreciation and stability which might further complicate lending scenarios even if one has a fair or good credit score (ranging from 650-700). As such, it becomes even more important for those living in mobile homes to maintain strong credit profiles to ensure access to competitive loan products.

It's also worth noting that some lenders specialize in serving customers with subprime credit or those who reside in manufactured housing communities. These lenders might offer tailored solutions that consider factors beyond just the traditional credit score model. Exploring these options could provide pathways for securing necessary funding at reasonable costs despite potential obstacles posed by lower scores or non-traditional housing circumstances.

In conclusion, while securing HVAC financing for mobile homes largely depends on one's credit score, understanding how different tiers affect loan terms is vital for making informed decisions. Maintaining a healthy credit profile remains crucial not only for accessing affordable finance but also ensuring long-term financial health through reduced interest expenditures and

improved repayment conditions. For those struggling with lower scores yet needing urgent improvements like an HVAC system upgrade, seeking specialized financial advice or exploring niche lending markets could prove beneficial paths forward.

Key factors to consider when choosing a financing option

When it comes to financing options for mobile home HVAC systems, understanding credit score requirements can be crucial. Your credit score is a significant factor that lenders consider when determining your eligibility and the terms of financing you might receive. Improving your credit score can open doors to better financing options, making it easier to afford necessary upgrades or installations.

Firstly, it's important to recognize the role of your credit score in securing financing. Lenders typically assess your financial history to gauge how likely you are to repay a loan. A higher credit score often translates into lower interest rates and more favorable terms. For mobile home HVAC systems, where costs can be substantial, qualifying for better financing options can significantly reduce the financial burden.

To improve your credit score, begin by checking your current credit report from major bureaus like Experian, Equifax, and TransUnion. Ensuring that there are no errors or inaccuracies is vital as these could unjustly lower your score. Dispute any discrepancies you find promptly.

Next, focus on paying down existing debts. Credit utilization—the ratio of your current debt to your available credit—plays a critical role in determining your score. Aim to keep this ratio below 30%. If possible, pay off high-interest debts first as this will also save you money in the long run.

Timely bill payments cannot be overstated when it comes to improving credit scores. Late payments negatively impact scores significantly; thus, setting up automatic payments or reminders can help ensure bills are paid on time consistently.

Another strategy involves avoiding opening too many new accounts at once. Each application for new credit results in a hard inquiry on your report, which can temporarily lower your score. Therefore, apply judiciously and only when necessary.

Building a diverse mix of credit types-such as revolving (credit cards) and installment loans (car loans)-can also benefit your score over time if managed responsibly.

For those with limited or poor credit history, becoming an authorized user on someone else's account or applying for a secured credit card could provide opportunities to build positive payment histories without taking on excess risk.

In comparing requirements across different lenders for mobile home HVAC systems specifically, you'll notice that some may have less stringent criteria than others-often catering to borrowers with varying levels of creditworthiness. By improving your own standing before applying for such financing options, you'll not only increase the likelihood of approval but also position yourself for better terms-ultimately leading to cost savings over the life of the loan.

In summary, taking active steps towards improving one's credit score is beneficial not just broadly but particularly so when seeking specific financings like those required for mobile home HVAC systems. With diligent attention to financial habits and strategic planning around debt management and repayment schedules-you'll be well-equipped to secure more attractive financing solutions tailored exactly toward meeting both immediate needs as well as long-term goals efficiently and effectively.



Personal Loans for HVAC Systems

In the realm of mobile home ownership, maintaining a comfortable living environment is paramount, particularly when it comes to heating, ventilation, and air conditioning (HVAC) systems. However, financing these essential upgrades can pose a unique set of challenges. For many homeowners, navigating the credit requirements for HVAC financing becomes an intricate dance between financial capability and lender expectations. By examining real-world case studies of mobile home owners who have successfully secured HVAC financing, we gain valuable insights into the diverse credit landscapes they encountered.

Consider the story of Linda from Ohio, a single mother living in a vibrant community of mobile homes. With her aging HVAC system on the brink of failure during an unusually harsh winter, Linda faced an urgent need for replacement but had limited savings. Her initial search for financing options revealed that credit scores were a significant factor in determining eligibility and interest rates. With a fair credit score hovering around 650, she approached several lenders with varying results.

One lender offered her financing with an interest rate much higher than she anticipated due to her credit score being below their preferred threshold of 700. However, another lender specialized in working with clients who owned mobile homes and understood their unique circumstances. They provided more flexible terms that accommodated her financial situation by considering her steady income and payment history beyond just her credit score alone.

Similarly, John and Mary from Texas found themselves in dire need of upgrading their outdated HVAC system to combat the sweltering summer heat. Their challenge was compounded by having recently refinanced their mobile home mortgage which temporarily affected their overall credit profile. Despite this setback, they were able to secure favorable terms through a local credit union that had specific programs tailored for energy-efficient upgrades.

The key to John and Mary's success lay not only in their diligent research but also in building relationships with local financial institutions familiar with regional housing market conditions. This approach allowed them access to lower interest rates despite having less-than-perfect credit at that moment.

These case studies highlight critical lessons for mobile home owners embarking on similar journeys toward HVAC financing. Firstly, understanding one's own credit profile and how it aligns with lender requirements is crucial; doing so allows homeowners like Linda to strategically target lenders who offer tailored solutions rather than generic high-interest loans based solely on traditional metrics such as FICO scores.

Secondly - as demonstrated by John and Mary - engaging directly with community-based lenders or those specializing in niche markets often yields better outcomes compared to larger national entities whose criteria may not account sufficiently for specific homeowner scenarios involving mobile properties.

Ultimately though challenges remain prevalent when seeking funding pathways within this sector-especially given historical biases against manufactured housing-it is evident through these narratives that persistence coupled with informed decision-making can indeed pave pathways toward successful acquisition without undue strain upon personal finances nor compromise upon desired quality standards expected from modern-day residential climate control systems today's consumers seek eagerly therein!

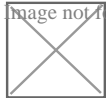
About Sick building syndrome



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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)**.

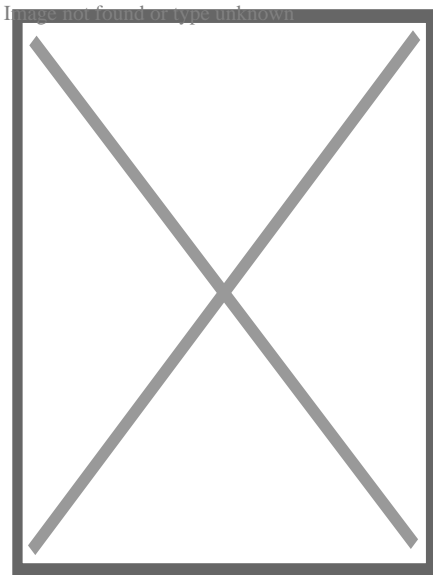
The main identifying observation is an increased incidence of complaints of such symptoms as headache, eye, nose, and throat irritation, fatigue, dizziness, and nausea. The 1989 Oxford English Dictionary defines SBS in that way.^[2] The World Health Organization created a 484-page tome on indoor air 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

[edit]



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 μm
- 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 caused 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

[edit]



This section **possibly contains original research**. Please improve it by verifying the claims made and adding inline citations. Statements consisting only of original research should be removed. (*August 2017*) (*Learn how and when to remove this message*)

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

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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
- Passive daytime radiative cooling
- Passive house
- Passive ventilation
- Radiant heating and cooling
- Radiant cooling
- Radiant heating
- Radon mitigation
- Refrigeration
- Renewable heat
- Room air distribution
- Solar air heat
- Solar combisystem
- Solar cooling
- Solar heating

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

**Measurement
and control**

- Air flow meter
- Aquastat
- BACnet
- Blower door
- Building automation
- Carbon dioxide sensor
- Clean air delivery rate (CADR)
- Control valve
- Gas detector
- Home energy monitor
- Humidistat
- HVAC control system
- Infrared thermometer
- Intelligent buildings
- LonWorks
- Minimum efficiency reporting value (MERV)
- Normal temperature and pressure (NTP)
- OpenTherm
- Programmable communicating thermostat
- Programmable thermostat
- Psychrometrics
- Room temperature
- Smart thermostat
- Standard temperature and pressure (STP)
- Thermographic camera
- Thermostat
- Thermostatic radiator valve
- 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

**Professions,
trades,
and services**

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)
- ASHRAE Handbook
- Building science
- Fireproofing

See also

- Glossary of HVAC terms
- Warm Spaces
- World Refrigeration Day
- Template:Home automation
- Template:Solar energy

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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
- Cooperative
- Employee
- Employer
- Internship

Roles

- 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
- 35-hour workweek
- Four-day week
- Eight-hour day
- 996 working hour system

Schedules

- Flextime
- On-call
- Overtime
- Remote work
- Six-hour day
- Shift work
- Working time
- Workweek and weekend
- Income bracket
- Income tax
- Living wage
- Maximum wage
- National average salary
 - World
 - Europe
- Minimum wage
 - Canada
 - Hong Kong
 - Europe
 - United States

Wages and salaries

- 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
- 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

Safety and health

- 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
- Affirmative action

Equal opportunity

- 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
- Boreout
- Careerism
- Civil conscription
- Conscription
- Critique of work
- Dead-end job
- Job satisfaction
- McJob
- Organizational commitment
- Refusal of work
- Slavery

Willingness

- 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
- 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

Public programs

Comprehensive Employment and Training Act

- 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

See also

See also templates

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

- Japan

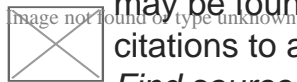
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About Fan coil unit

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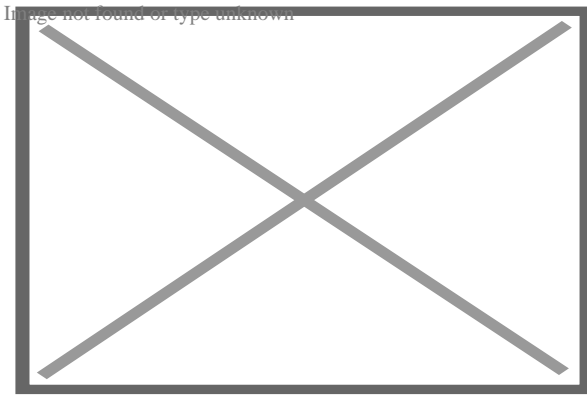


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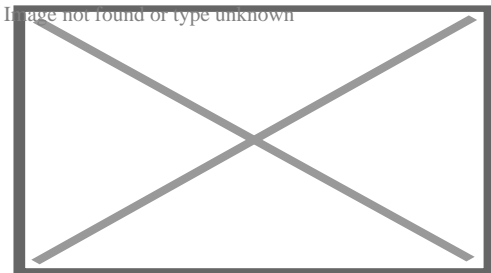
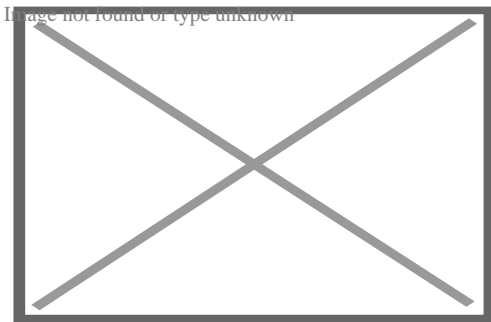


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Refrigerant based Fan-Coil Unit. Other variants utilize a chilled, or heated water loop for space cooling, or heating, respectively.



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

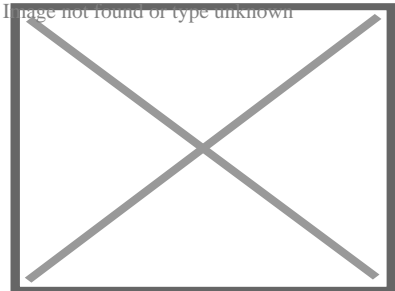
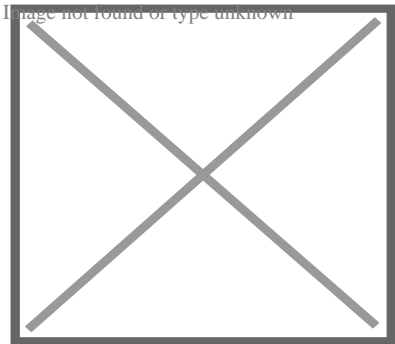
ineffective and above 7.5 Volts the fan coil is likely to be too noisy for most commercial applications.

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]

1. [^] "Fan Coil Unit". *Heinen & Hopman*. Retrieved 2023-08-30.
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
- Passive daytime radiative cooling
- Passive house
- Passive ventilation
- Radiant heating and cooling
- Radiant cooling
- Radiant heating
- Radon mitigation
- Refrigeration
- Renewable heat
- Room air distribution
- Solar air heat
- Solar combisystem
- Solar cooling
- Solar heating

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

**Measurement
and control**

- Air flow meter
- Aquastat
- BACnet
- Blower door
- Building automation
- Carbon dioxide sensor
- Clean air delivery rate (CADR)
- Control valve
- Gas detector
- Home energy monitor
- Humidistat
- HVAC control system
- Infrared thermometer
- Intelligent buildings
- LonWorks
- Minimum efficiency reporting value (MERV)
- Normal temperature and pressure (NTP)
- OpenTherm
- Programmable communicating thermostat
- Programmable thermostat
- Psychrometrics
- Room temperature
- Smart thermostat
- Standard temperature and pressure (STP)
- Thermographic camera
- Thermostat
- Thermostatic radiator valve
- 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

**Professions,
trades,
and services**

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)
- ASHRAE Handbook
- Building science
- Fireproofing

See also

- Glossary of HVAC terms
- Warm Spaces
- World Refrigeration Day
- Template:Home automation
- Template:Solar energy

About Durham Supply Inc

Photo

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Things To Do in Tulsa County

Photo

Image not found or type unknown

Streetwalker Tours

0 (0)

Photo

Image not found or type unknown

Tulsa Botanic Garden

4.7 (1397)

Photo

Philbrook Museum of Art

4.8 (3790)

Photo

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OkieTundra

4.5 (84)

Photo

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Gathering Place

4.8 (12116)

Photo

The Blue Dome

4.5 (60)

Driving Directions in Tulsa County

Driving Directions From OYO Hotel Tulsa International Airport to Durham Supply Inc

Driving Directions From Lincoln Christian School to Durham Supply Inc

Driving Directions From Nights Stay Hotel to Durham Supply Inc

Driving Directions From Dollar General to Durham Supply Inc

Driving Directions From Catoosa to Durham Supply Inc

Driving Directions From Subway to Durham Supply Inc

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[HVAC contractor](#)

[Mobile Home Furnace Installation](#)

[Mobile Home Air Conditioning Installation Services](#)

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[Mobile Home Hvac Service](#)

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Driving Directions From Woodward Park and Gardens to Durham Supply Inc

Driving Directions From Streetwalker Tours to Durham Supply Inc

Driving Directions From Golden Driller Statue to Durham Supply Inc

Driving Directions From The Blue Dome to Durham Supply Inc

Driving Directions From The Tulsa Arts District to Durham Supply Inc

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[Air conditioning store](#)

[Air conditioning system supplier](#)

[Furnace repair service](#)

Reviews for Durham Supply Inc

Durham Supply Inc

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Ty Spears

(5)

Bought a door/storm door combo. Turns out it was the wrong size. They swapped it out, quick and easy no problems. Very helpful in explaining the size differences from standard door sizes.

Durham Supply Inc

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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

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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.

Durham Supply Inc

Image not found or type unknown

Ethel Schiller

(5)

This place is really neat, if they don't have it they can order it from another of their stores and have it there overnight in most cases. Even hard to find items for a trailer! I definitely recommend this place to everyone! O and the prices is awesome too!

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.

[View GBP](#)

Check our other pages :

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Frequently Asked Questions

What are the typical credit score requirements for financing a mobile home HVAC system?

The typical credit score requirement for financing a mobile home HVAC system varies by lender, but generally ranges from 580 to 650. Some lenders may offer options for those with lower scores.

Are there specific lenders that specialize in financing mobile home HVAC systems?

Yes, certain financial institutions and specialized lending companies focus on manufactured or mobile home improvements, including HVAC systems. Its important to research and compare their terms.

How does the credit score impact interest rates when financing an HVAC system for a mobile home?

A higher credit score typically results in lower interest rates, making monthly payments more affordable over time. Conversely, lower scores might lead to higher rates.

Can I qualify for government programs to assist with financing my mobile homes HVAC system if I have bad credit?

Some government programs or grants may be available to assist low-income individuals or those with poor credit in upgrading their homes energy efficiency, including HVAC systems. Checking local resources is advisable.

Are there alternative financing options available if traditional loans require too high of a credit score?

Yes, alternatives such as personal loans from online lenders, secured loans using collateral, or retailer-specific payment plans can be considered if traditional financing isnt accessible due to high credit score demands.

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Google Business Profile

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

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