

# Ashrae Cooling And Heating Load Calculation Manual

Objects struck by sunlight absorb its visible and short-wave infrared components, increase in temperature, and then re-radiate that heat at longer infrared wavelengths. Though transparent building materials such as glass allow visible light to pass through almost unimpeded, once that light is converted to long-wave infrared radiation by materials indoors, it is unable to escape back through the window since glass is opaque to those longer wavelengths... 47eff6cc98 Advocates of autonomous building describe advantages that include reduced environmental impacts, increased security, and lower costs of ownership. Some cited advantages satisfy tenets of green building, not independence per se (see below). Off-grid buildings often rely very little on civil services and are therefore safer and more comfortable during civil disaster or military attacks. For example, off-grid buildings would not lose power or... 47eff6cc98

Automatic balancing valve They use the latest flow technology to ensure that the design flow rate is achieved at all times irrespective of any pressure changes within the system. Automatic balancing valves are utilised in central heating and cooling systems that rely on flow of water through the system. They use the latest flow Automatic balancing valves are utilised in central heating and cooling systems that rely on flow of water through the system 47eff6cc98

This glossary of mechanical engineering terms pertains specifically to mechanical engineering and its sub-disciplines. For a broad overview of engineering, see glossary of engineering. 47eff6cc98 Christoph Reinhart at

MIT describes thermal mass as its volume times its volumetric heat capacity. 47eff6cc98

Thermal comfort The heat transfer is proportional to temperature difference. Thermal comfort calculations in accordance with the ANSI/ASHRAE Standard 55, the ISO 7730 Standard and the EN 16798-1 Standard can be freely Thermal comfort is the condition of mind that expresses subjective satisfaction with the thermal environment. The human body can be viewed as a heat engine where food is the input energy. or temporally. Maintaining this standard of thermal comfort for occupants of buildings or other enclosures is one of the important goals of HVAC (heating, ventilation, and air conditioning) design engineers. Both the hot and cold scenarios lead to discomfort. The human body will release excess heat into the environment, so the body can continue to operate. In cold environments, the body loses more heat to the environment and in hot environments the body does not release enough heat 47eff6cc98

Autonomous building These houses An autonomous building is a hypothetical building designed to be operated independently from infrastructural support services such as the electric power grid, gas grid, municipal water systems, sewage treatment systems, storm drains, communication services, and in some cases, public roads. The literature mostly refers to housing, or the autonomous house. which would be comfortable without heating and cooling, which would make its own electricity, collect its own water and deal with its own waste 47eff6cc98

Thermal neutrality is maintained when the heat generated by human metabolism is... 47eff6cc98

Glossary of mechanical engineering However, glossaries like this one are useful for looking up, comparing and reviewing large numbers of terms together. You can help enhance this page by adding new terms or writing definitions for existing ones. Active cooling – an active cooling system is one that involves the use of energy to cool something, as opposed Most of the terms listed in Wikipedia glossaries are already defined and explained within Wikipedia itself. including proteomics and cell-based assays 47eff6cc98

Because: 47eff6cc98

Thermal mass according to Manual J is sized to maintain comfort at the first percentile of temperature for heating and the 99th percentile of temperature for cooling. The In building design, thermal mass is a property of the matter of a building that requires a flow of heat in order for it to change temperature 47eff6cc98

Not all writers agree on what physical property of matter "thermal mass" describes. Most writers use it as a synonym for heat capacity, the ability of a body to store thermal energy. It is typically referred to by the symbol  $C_{th}$ , and its SI unit is J/K or J/°C (which are equivalent). 47eff6cc98

Ventilative cooling Ventilative cooling strategies are applied in a wide range of buildings and may even be critical to realize renovated or new high efficient buildings and zero-energy buildings (ZEBs). It can be used additionally to remove both excess heat gains, as well as increase the velocity of the air and thereby widen the thermal comfort range. The use of outside air reduces the cooling load and the energy Ventilative cooling is the use of natural or mechanical ventilation to cool indoor spaces. Ventilative cooling is assessed by long-term evaluation indices. The use of outside air reduces the cooling load and the energy consumption of these systems, while maintaining high quality indoor conditions; passive ventilative cooling may eliminate energy consumption. Ventilative cooling is dependent on the. Ventilation is present in buildings mainly for air quality reasons. Ventilative cooling is the use of natural or mechanical ventilation to cool indoor spaces 47eff6cc98

Cooling load temperature difference calculation method estimating the cooling load or heating load of a building. It was introduced in the 1979 ASHRAE handbook. The CLTD/CLF/SCL (cooling load temperature difference/cooling The cooling load temperature difference (CLTD) calculation method, also called the cooling load factor (CLF) or solar cooling load factor (SCL) method, is a method of estimating the cooling load or heating load of a building. It was introduced in the 1979 ASHRAE handbook 47eff6cc98

**Solar gain** The amount of solar gain a space experiences is a function of the total incident solar irradiance and of the ability of any intervening material to transmit or resist the radiation. the United States, The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), and The National Fenestration Rating Council Solar gain (also known as solar heat gain or passive solar gain) is the increase in thermal energy of a space, object or structure as it absorbs incident solar radiation 47eff6cc98

Randa Ghattas, Franz-Joseph Ulm and Alison Ledwith, also at MIT, write that "It [thermal mass] is dependent on the relationship between the specific heat capacity, density, thickness and conductivity of a material" although they don't provide a unit, describing... 47eff6cc98

**ASHRAE 90.1** The standard. In 1999 the ASHRAE Board of Directors voted to place the standard on continuous maintenance, based on rapid changes in energy technology and energy prices. There have been multiple editions to it since. 1: Energy Standard for Buildings Except Low-Rise Residential Buildings is an American National Standards Institute (ANSI) standard ANSI/ASHRAE/IES Standard 90. This allows it to be updated multiple times in a year. The original standard, ASHRAE 90, was published in 1975. e. ANSI/ASHRAE/IES Standard 90. 1: Energy Standard for Buildings Except Low-Rise Residential Buildings is an American National Standards Institute (ANSI) standard published by ASHRAE and jointly sponsored by the Illuminating Engineering Society (IES) that provides minimum requirements for energy efficient designs for buildings except for low-rise residential buildings (i. single-family homes, multi-family buildings less than four stories high, mobile homes and modular homes) 47eff6cc98

**Building performance simulation** Building performance simulation has various sub-domains; most prominent are thermal simulation, lighting simulation, acoustical simulation and air flow simulation. components Load profiles: for heating and cooling demand, electricity profile for equipment and lighting Energy demand: for heating, cooling, ventilation Building performance simulation (BPS) is the replication of aspects of building performance using a computer-based, mathematical model created on the basis of fundamental physical principles and sound

engineering practice. Building performance simulation itself is a field within the wider realm of scientific computing. Most building performance simulation is based on the use of bespoke simulation software. The objective of building performance simulation is the quantification of aspects of building performance which are relevant to the design, construction, operation and control of buildings 47eff6cc98

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