

Glossary of Climate Control Terms

A

Air Exchange: Refers to the replacement of indoor air with outdoor air. Proper air exchange is necessary to remove contaminants, control humidity, and maintain air quality on construction sites.

Air Mover: A high-velocity fan used to circulate air, speed up the drying process, and improve ventilation to manage moisture, dust, and fumes.

ASHRAE Standards: Guidelines set by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, are critical for ensuring proper climate control in construction.

B

British Thermal Unit (BTU): A unit of heat energy. In construction climate control, it measures the energy required to heat or cool air within a space, helping to size and evaluate HVAC equipment.

C

Chiller: A machine that removes heat from a liquid via a vapor-compression or absorption refrigeration cycle.

Coil: In HVAC systems, a coil is a component through which refrigerant flows, absorbing or releasing heat, they are integral to both heating and cooling processes on construction sites. Coils that we work with can run cold water, hot water, steam, and refrigerant coils.

Concrete Drying: Techniques and equipment used to accelerate the drying of concrete, reducing the time needed before further construction can proceed.

Condensation Control: Methods to prevent the formation of condensation on materials, which can lead to mold growth and material damage.

Construction Drying: The process of removing excess moisture from building materials and structures to prevent damage and ensure proper curing. Climate control systems expedite drying, preventing delays and maintaining material quality. Common materials that benefit from active climate control include concrete, gypcrete, wood flooring, mass timber, dry wall, plaster, paint, millwork, and high-end finishes.

Cubic Feet per Minute (CFM): Measures the volume of airflow delivered by climate control equipment. It is crucial in assessing the capacity of HVAC and temporary systems to ventilate and condition air on construction sites.

D

Desiccant Dehumidifier: Equipment that uses desiccant material to remove moisture from the air. It includes a wheel that is coated with a desiccant, such as silica gel, lithium chloride, or molecular sieves, which have a high affinity for water vapor. The wheel is divided into two air streams: the process air stream and the regeneration air stream. The process air stream is the moist air that needs to be dehumidified, and the regeneration air stream is used to dry the desiccant material.

Dew Point: The temperature at which air becomes saturated with moisture and condensation forms. Monitoring the dew point helps prevent condensation-related issues in construction, such as mold and material degradation.

Direct Expansion (DX) Air Conditioner: An air conditioner that uses refrigerant coil to directly cool air directly in the supply air stream, without a secondary fluid. It essentially removes energy, lowering the temperature. They are commonly used on construction sites for their efficiency and rapid cooling capabilities.

Direct-Fired Heat: Refers to a type of heater that burns fuel directly within the airstream to generate heat. They are efficient for quickly heating large spaces but must be carefully managed to prevent combustion byproducts from contaminating the air.

Dry Bulb: Dry bulb temperature is the air temperature measured by a standard thermometer. It is the actual air temperature, unaffected by humidity, and is critical for designing and operating climate control systems.

E

Emergency Drying: Refers to the rapid removal of excess moisture and water to prevent further damage, mold growth, and structural integrity issues following unexpected water intrusion events, such as floods or leaks.

Energy-Efficient Equipment: Tools and machines designed to provide climate control on construction sites while minimizing energy use, thus reducing costs and environmental impact.



OUR APPROACH

Polygon is proud to support its clients with informed, tailored options that include more than just equipment and gear alone. We believe reliable solutions for real climate control problems require state-of-the-art equipment, real-time monitoring and control, and engineering and operational expertise. This is truly what makes the Polygon difference. Reach out to us to explore how engineered climate control solutions can help your building or project.

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To discuss how we can support your next project

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G

Grains: Grains refer to the weight of water vapor in the air, measured in grains per pound of dry air. It is used to quantify and manage moisture levels on construction sites.

H

Heat Gain: The increase in temperature within a space due to external sources like sunlight, machinery, or human activity. Controlling heat gain is essential to maintain optimal working conditions on construction sites.

HEPA Filtration: HEPA filter (High-Efficiency Particulate Air filter) is a type of air filter designed to trap at least 99.97% of airborne particles as small as 0.3 microns, ensuring the removal of dust, mold spores, and other contaminants to maintain air quality and safety on the site.

Honeycomb: A honeycomb structure often refers to the design of the desiccant dehumidification wheel or the heat exchanger. It provides several advantages including increased surface area, improved airflow, lightweight strength, enhanced moisture removal, and cooling efficiency.

Humidity Control Unit (HCU): A hybrid desiccant dehumidifier that combines cooling and desiccant dehumidification technologies in one package to remove excess moisture from the air or add humidity as needed to maintain optimal conditions. It is typically more energy-efficient at regulating humidity levels than standalone units.

Humidity Control: The process of maintaining specific humidity levels on a construction site to protect materials and prevent delays due to moisture-related issues.

I

IAQ (Indoor Air Quality): The quality of air within and around a construction site or space, important for both worker safety and the integrity of building materials. IAQ and specifically dust and particulate monitoring and control is important for data center construction and hospital renovation.

Indirect-Fired Heat: Refers to a type of heater that transfers heat to the air through a heat exchanger, ensuring that combustion byproducts are vented outside. They provide safe, clean heat, making them suitable for enclosed construction environments.

IoT (Internet of Things): The network of interconnected devices that monitor and manage environmental conditions. These devices can track temperature, humidity, air quality, and equipment performance in real-time, enabling efficient climate control and proactive maintenance.

L

Layflat: Lightweight plastic or polyethylene ducting used to direct airflow from equipment into target spaces. It “lays flat” when not in use and is easily extended to connect and distribute air efficiently.

M

Moisture Load: The total amount of moisture that needs to be removed from a space to achieve desired humidity levels. It includes sources like wet materials, human activity, and environmental humidity.

Moisture Management: Strategies and equipment used to control moisture levels in construction materials, preventing issues like mold and material degradation.

P

Particulate Matter: Tiny particles suspended in the air; this can affect air quality on construction sites. Effective climate control systems manage and reduce particulate matter to ensure a healthier work environment and clean space for installing sensitive equipment and electronics.

Psychrometrics: The study of the properties of air-water vapor mixtures. It involves understanding temperature, humidity, dew point, and other factors to manage climate control effectively on construction sites.

R

Relative Humidity (RH): The percentage of moisture in the air relative to the maximum amount the air can hold at a given temperature. It is a critical factor in construction climate control, affecting material curing, worker comfort, and equipment efficiency.

Remote Monitoring: Technology that allows for real-time tracking of climate conditions on a job site, ensuring that temperature and humidity levels remain within specified ranges.

S

Smart Control: Technology added to climate control equipment that automatically controls on, off, and other functions based on data from remotely connected sensors and user specified thresholds.

T

Temperature: The measure of the heat level within a building or construction environment.

Temporary Climate Control: Solutions to manage temperature and humidity on construction sites to ensure optimal conditions for materials and worker comfort. Durations are typically over the period of weeks, months or years.

Temporary Heating and Cooling: Solutions for providing heat or cooling on a construction site to ensure that work can continue in extreme weather conditions.

Tri-Fuel: Refers to systems that can operate on three different types of fuel: natural gas, liquid propane, and diesel. The fuel flexibility of tri-fuel systems allows users to select the most available, sustainable, or cost-effective fuel source at any given time, enhancing operational flexibility and reducing downtime.

W

Wet Bulb: Wet bulb temperature measures the lowest temperature air can reach through evaporation. It is an indicator of humidity and is used to assess comfort and drying conditions on construction sites.

Wood Moisture Content (WMC): Measures the amount of water in wood, expressed as a percentage of the wood's weight. Proper WMC is critical in construction to ensure structural integrity and avoid issues like warping or mold growth.

Wood Moisture Equivalent (WME): A value used by moisture meters to compare the moisture content of non-wood materials to wood. It provides an equivalent moisture content reading as if the material were wood, aiding in consistent moisture management.

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