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BASICS OF AIRPORT ENERGY MANAGEMENT
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MODULE
L3

Overview of Energy Use in Airport Environments

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BASICS OF AIRPORT ENERGY MANAGEMENT

Airports are divided into two main areas: landside and airside. The landside includes terminal buildings, parking, transportation, and access roads for public interaction, while the airside involves runways, taxiways, and aprons for aircraft operations. This study focuses on the landside, specifically terminal buildings, because of their high energy consumption compared to other airport facilities.

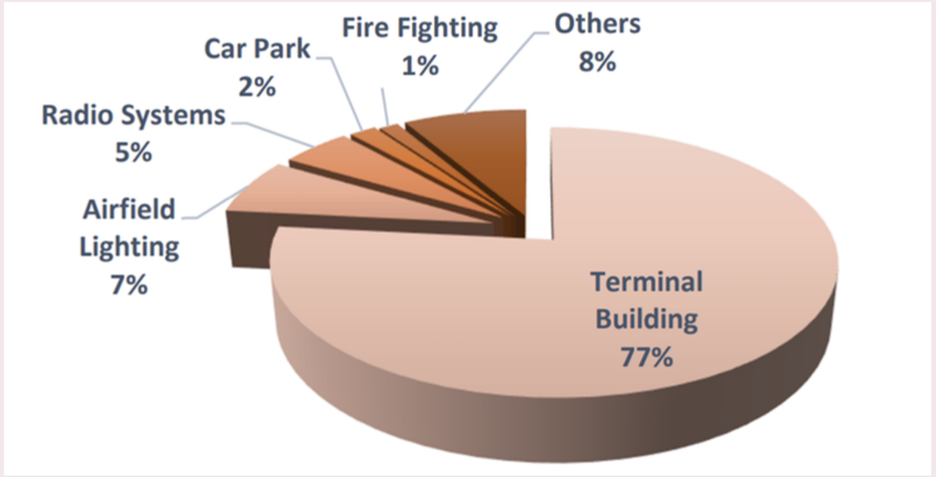
Learning Objectives

- Course Overview and Introduction
- Airports- Energy & Sustainability Perspectives
- Overview of energy use in airport environments
- The importance of conservation in aviation sustainability.
- Key energy consumption areas in airports
- Global trends in energy efficiency
- Energy Consumption Reduction Plan
- Benefits of energy management
- Summary and resources

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INTRODUCTION

- Airports are traditionally divided into two main areas: landside and airside.
- Landside areas include terminal buildings, parking lots, public transportation, and access roads.
- Airside areas consist of areas accessible to aircraft, such as runways, taxiways, and aprons.
- The study emphasizes the landside section, particularly focusing on the terminal building due to its high energy consumption.





OVERVIEW OF ENERGY USE IN AIRPORT ENVIRONMENTS



- Airports are major energy consumers, likened to small cities due to their multiple buildings and vehicles.
- Energy sources include electricity, jet fuel, and renewable resources like solar and wind energy.
- Electricity: Used for lighting, computers, and flight information displays, as well as in terminals for air conditioning and comfort.
- Fuel: Primarily jet fuel powers planes and vehicles transporting people and luggage.
- Renewable Energy: Some airports deploy solar panels and wind turbines to minimize environmental impact.
- Energy is utilized in terminals for passenger services, runways for safety lighting, and baggage handling through energy-efficient machinery.

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OVERVIEW OF ENERGY USE IN AIRPORT ENVIRONMENTS +

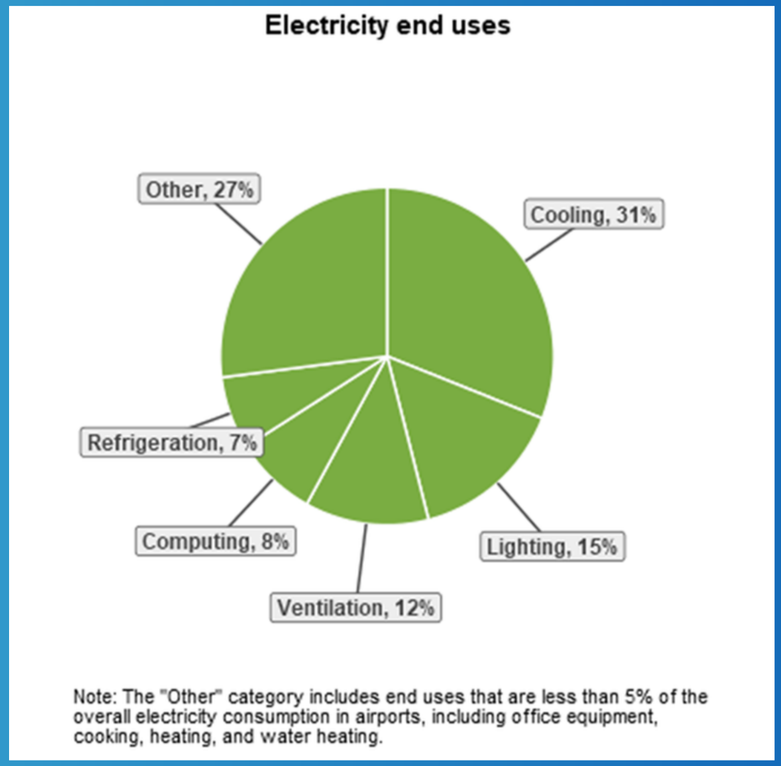
- Airports aim to reduce energy consumption by adopting energy-saving equipment and conducting energy audits to identify inefficiencies.
- Sustainable building practices are being implemented to enhance energy efficiency in new airport constructions.
- The future of airports aims for increased reliance on renewable energy sources to lower environmental footprints.
- Overall, airports are actively seeking ways to optimize energy usage while supporting operational needs and environmental sustainability.



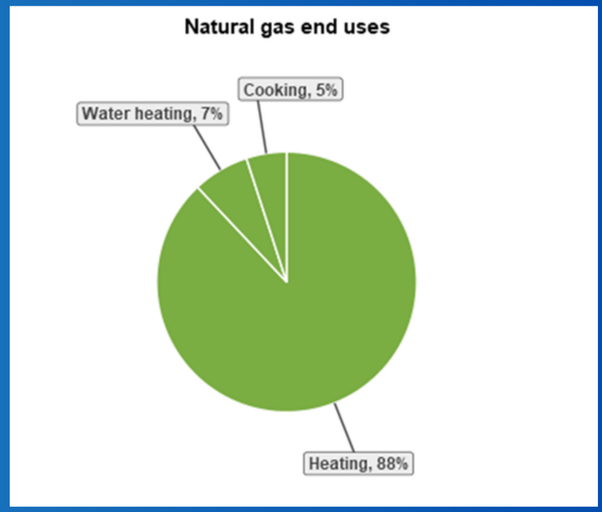
ENERGY CONSUMPTION BY END USE







Note: The "Other" category includes end uses that are less than 5% of the overall electricity consumption in airports, including office equipment, cooking, heating, and water heating.



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AIRPORTS AND SUSTAINABILITY: THE BIG PICTURE

- The aviation industry is moving toward climate neutrality, with ACI Europe committing to net zero carbon emissions by 2050.
- Over 270 airports are part of the Airport Carbon Accreditation program, aiming for significant carbon reduction.
- Increasing investments are supporting the development of low emissions technologies while existing technologies gain commercial viability.
- Key global trends supporting low carbon operations include:

- Growth in electrified and smart ground support equipment usage.
- Significant reductions in wind (67%) and solar (86%) electricity generation costs since 2010.
- Introduction of more fuel-efficient aircraft, averaging 20% improved fuel efficiency.
- Initiatives enhancing investment in energy efficiency and low emissions technologies in airport buildings.
- Advancements in smart metering and building analytics for real-time energy performance monitoring.
- Development of energy-efficient technologies such as baggage handling and airfield lighting systems.



AIRPORTS AND SUSTAINABILITY: THE BIG PICTURE +

- The aviation industry accounts for 2% of global carbon emissions, with airport-controlled activities responsible for 2-3% of these emissions (15-20 million tons CO2-e annually).
- Predicted growth in air travel could double passenger numbers to 8.2 billion by 2037, raising concerns about absolute greenhouse gas emissions.
- Climate change poses risks to airport operations, with extreme weather causing around 70% of annual flight delays.
- Economic challenges include fluctuating electricity prices and jet fuel markets, alongside growing consumer and investor pressures for a low carbon economy.
- Global momentum led to commitments for net zero emissions, with the Paris Agreement advocating for all sectors to achieve net zero by 2050.



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