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BASICS OF AIRPORT ENERGY MANAGEMENT
ONLINE TRAINING BY KRISHNAJI PAWAR
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MODULE

L8

Benefits of Energy Management



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BASICS OF AIRPORT ENERGY MANAGEMENT

Energy management in airports is an important topic because it helps airports operate more efficiently and sustainably. Airports are large facilities that require a lot of energy for various functions, such as lighting, heating, cooling, and operating machinery. By managing energy use effectively, airports can save money, reduce their environmental impact, and improve the overall passenger experience.

Learning Objectives

- Course Overview and Introduction
- Airports- Energy & Sustainability Perspectives
- Overview of energy use in airport environments
- 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

- Cost Savings: Significant reductions in energy bills through energy-saving measures like LED lighting, potentially saving up to 75% on lighting costs.
- Environmental Impact: Reduction of greenhouse gas emissions; targeting carbon neutrality by adopting renewable energy sources and decreasing energy consumption by 20% can have a major impact.
- Improved Passenger Experience: Enhanced comfort and safety through energy-efficient technologies, reducing delays from outages.



BENEFITS OF ENERGY MANAGEMENT IN AIRPORTS



- Regulatory Compliance: Active energy management helps avoid fines and meet government regulations, improving airport reputation.
- Resilience and Reliability: Ensured operations during outages with backup systems, maintaining essential services like security and baggage handling.
- Innovation and Technology: Adoption of smart, real-time monitoring systems to identify inefficiencies and promote innovative practices within airport operations.

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AIRPORTS PLAY A CRITICAL ROLE IN THE AIR TRANSPORT VALUE CHAIN

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- Airports are crucial in the air transport value chain, requiring significant energy for operations.
- As energy-intensive entities, airports seek to manage energy sustainably as part of their environmental strategies.
- The study focuses on Copenhagen Airport, a major air traffic hub in Scandinavia, examining its sustainable energy management practices.
- The primary environmental impact from energy use at the airport is CO2 emissions from both air and land side operations.
- Copenhagen Airport has implemented various methods to mitigate the environmental impact and improve energy efficiency.





AIRPORTS PLAY A CRITICAL ROLE IN THE AIR TRANSPORT VALUE CHAIN +



- Key strategies include technological solutions, process enhancements, and collaboration with stakeholders.
- Energy management is essential due to the high power demands for heating, ventilation, air conditioning (HVAC), and lighting in airport buildings.
- Approximately 70% of energy in airport terminal buildings is consumed for HVAC, necessitating secure and reasonably priced energy supplies to meet peak demands and ensure passenger comfort.

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KEY AIRPORT STAKEHOLDER ENERGY REQUIREMENTS

- Energy consumption at airports is divided into airside and landside activities.
- The airside area involves restricted access for aircraft movements and related infrastructure.
- Energy needs on the airside include fuel for aircraft during landing and take-off (LTO) cycles, as well as energy for ground vehicles at the apron.
- Landside energy consumption primarily comes from airport ground access systems, passenger and air cargo terminals, and administrative buildings.



KEY STAKEHOLDERS

Table 1. Key stakeholders involved in the provision of an airport's landside operations/services and their energy requirements.

Stakeholder	Energy Requirements
Airport Authority	Provision of terminal(s) power, terminal and facilities lighting, air conditioning (cooling and heating), car park lighting, power for baggage systems
Airlines	Power for office air conditioning, IT systems, and lighting
Airport Tenants and Concessionaires	Power for office air conditioning, IT systems, and office/terminal lighting
Car Rental Firms	Power for office cooling and heating, IT systems, and vehicle washing facilities
Cargo Terminal Operator [1]	Power for office air conditioning, cargo handling and IT systems, and office/terminal lighting
Eating and Dining Establishments	Power for office and cooking/refrigeration systems, lighting, and air conditioning
Freight Forwarders	Power for office air conditioning, IT systems, and office/terminal lighting
Government Agencies	Power for office air conditioning, IT systems, and lighting
Ground Handling Agents	Power for office air conditioning, IT systems, office/terminal lighting, and electric powered ground service equipment (GSE [2])
Ground Transportation (buses, etc.)	Power for office air conditioning and lighting
Hotels	Power for office, guest, and function rooms; air conditioning; lighting; catering and cleaning; and IT systems
Security Services	Power for office air conditioning, lighting, IT systems, and security screening equipment
Taxi Cab Holding Bays	Power for office air conditioning, lighting, signage, catering facilities, and IT systems

Notes: [1] Cargo terminals are facilities in which individual air cargo consignments are built up into cargo loads ready for loading onto an airline's aircraft and, following transport to their destination, are unloaded into individual shipments for delivery to the final customer or their nominated agent. Cargo terminals typically provide office space for their client airlines. [2] Ground service equipment (GSE) refers to the pre-specified set of vehicular equipment (such as aircraft lower deck belly-hold loaders, push back tractors) that are required to service an arrival or a departure of a specific type of aircraft (for example, Airbus A380 or Boeing B777-300ER) [18] (p. 235).





KEY AIRPORT STAKEHOLDER ENERGY REQUIREMENTS +



- The main energy sources are non-renewable fossil fuels, with some contributions from renewable sources like wind, water, and solar.
- Airport stakeholders require power for their systems, equipment, air conditioning, and lighting.
- Additional lighting needs are for car parks, railway stations, and transfer access points.
- Table 1 presents various stakeholders and their typical energy requirements for handling passengers and air cargo on the landside.

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