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BASICS OF AIRPORT ENERGY
MANAGEMENT
ONLINE TRAINING BY KRISHNAJI PAWAR
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MODULE
L6

Global Trends in Energy Efficiency

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BASICS OF AIRPORT ENERGY MANAGEMENT

As global air travel expands, the aviation industry prioritizes sustainability, especially at airports which are major energy consumers. These sprawling facilities face substantial energy demands from various operations, contributing to high operational costs and greenhouse gas emissions. Data from the U.S. Department of Energy indicates that airports consume significant energy compared to other commercial entities, highlighting the urgency for energy-efficient practices.

Learning Objectives

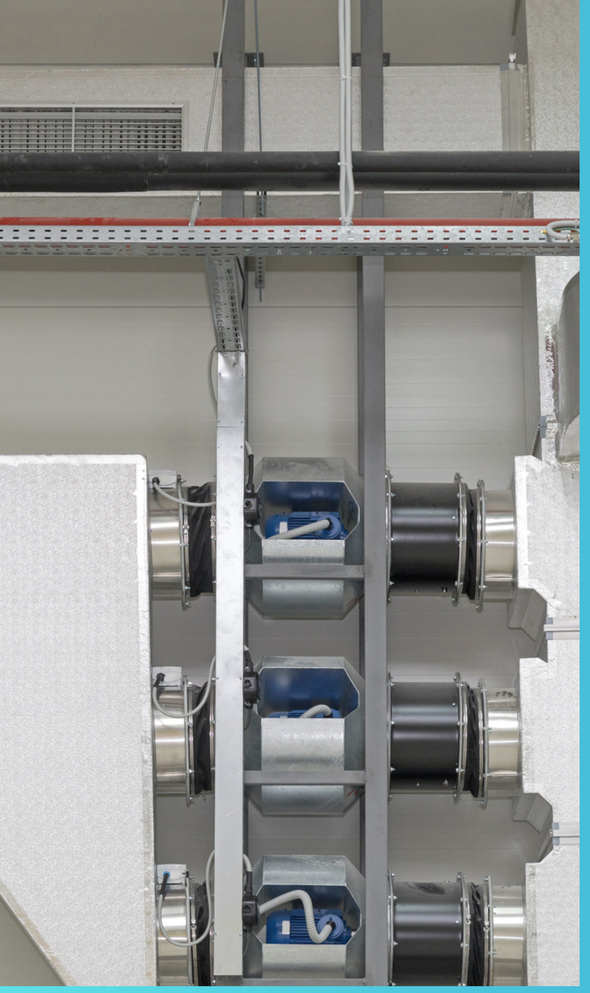
- Course Overview and Introduction
- Airports- Energy & Sustainability Perspectives
- Overview of energy use in airport environments
- Importance of conservation in aviation sustainability.
- Key energy consumption areas in airports
- Global trends in energy efficiency
- Energy Consumption Reduction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

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INTRODUCTION

- The aviation industry in the Middle East and North Africa (MENA) is rapidly expanding, largely driven by Emirates and Gulf airline carriers.
- Saudi Arabia's aviation sector is one of the fastest-growing in the nation, with a peak demand of over 103 million passengers in 2019.
- From 2010 to 2019, air traffic in Saudi Arabia exhibited a compound annual growth rate (CAGR) of 9.8%.
- Historical data shows an average yearly growth rate of 15% from 1971 to 1994, supporting the recent expansion trend.

COMMON CONTROL STRATEGIES





- The number of operational international airports in Saudi Arabia has increased from three in the early 1980s to 27 by 2022, serving various domestic and international routes.
- The growth of the aviation sector in Saudi Arabia is projected to exceed the nation’s GDP growth rate.
- The International Air Transport Association (IATA) estimates a global aviation industry growth rate of approximately 3.3% from 2019 to 2040

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GLOBAL TRENDS IN ENERGY EFFICIENCY

- The aviation industry is focusing on sustainability to reduce environmental impacts as air travel increases.
- Airports, being energy-intensive hubs, are prioritizing energy efficiency to lower carbon footprints and operational costs.





KEY STRATEGIES FOR ENERGY-EFFICIENT AIRPORT FACILITIES INCLUDE:



- Advanced HVAC Systems: Adoption of technologies like variable refrigerant flow (VRF) and geothermal cooling to optimize energy use.
- Smart Lighting Solutions: Transition to LED lights and motion-sensor technology can reduce energy usage by up to 75%.
- Renewable Energy Integration: Facilities like solar farms at airports enhance sustainability and reduce reliance on fossil fuels.
- Building Automation Systems (BAS): Real-time monitoring and control of energy systems improve efficiency.
- Efficient Ground Support Equipment (GSE): Transitioning to electric equipment lowers emissions and operational costs.

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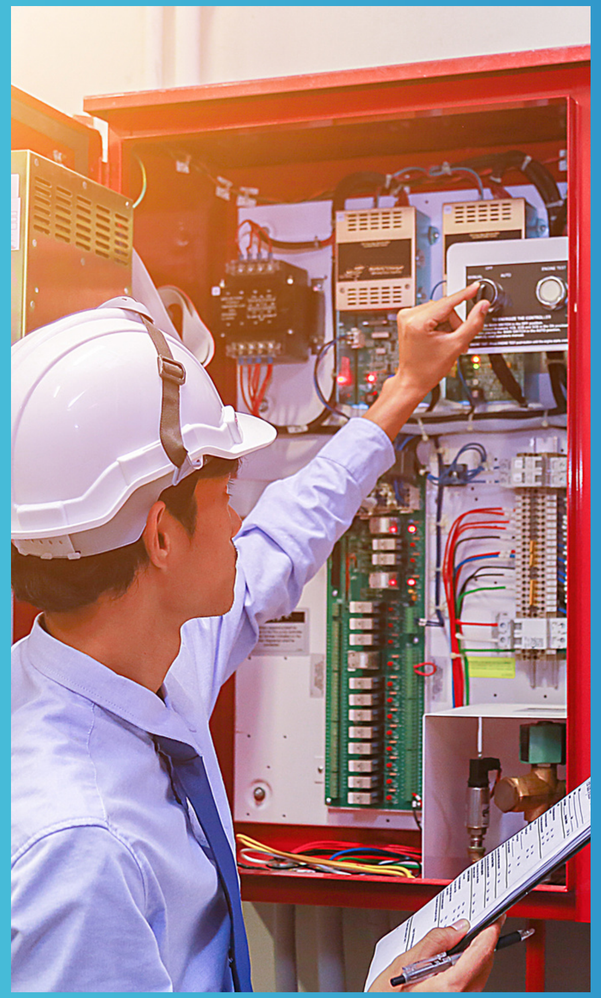
BENEFITS OF IMPLEMENTING ENERGY-EFFICIENT PRACTICES INCLUDE

- Cost savings for reinvestment into further sustainability efforts.
- Reduction in greenhouse gas emissions contributing to climate change efforts.
- Enhanced passenger experiences through better environments.
- Compliance with regulations, boosting public trust.



GLOBAL TRENDS IN ENERGY EFFICIENCY





- Challenges include high initial costs and the complexity of technology integration, but support from grants and partnerships can mitigate these issues.
- Future advancements may include smart grid technology, carbon capture, hydrogen power, and AI for improved efficiency and management.
- Emphasizing energy-efficient designs is crucial for sustainable aviation.

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