Digital Products & Field Services Digitalization

Asansor, Istanbul 2025
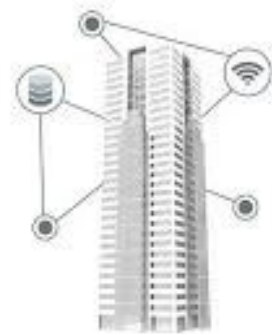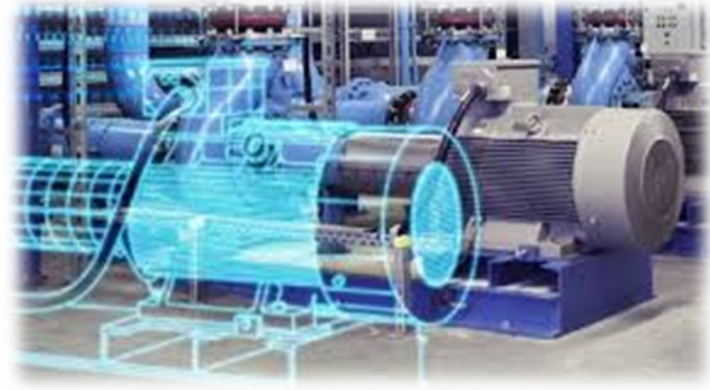
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Understanding the Digital Twin Concept in Elevator Systems

DIGITAL TWIN

Digital twin

Real world

Exploring the benefits of digital twins for elevator safety and efficiency & installation improvements

1

Advancing Elevator Safety Through Digital Twin Technology

Digital twin technology enhances the **safety of elevators** by enabling **real-time monitoring** and predictive analysis, thereby significantly reducing accident rates.

2

Efficiency Gains in Elevator Systems Using Digital Twins

Implementing digital twins allows for **streamlined maintenance processes** and operational efficiencies, directly impacting the longevity and reliability of elevators.

3

Transformative Impact of Digital Twins on Installation Quality

Digital twins provide critical insights during **installation**, ensuring all components are correctly aligned and operational, thus minimizing human error.

The role of IoT in revolutionizing elevator design and maintenance practices

IoT
Internet of Things

1
IoT Innovations Reshaping Elevator Design
The Internet of Things (IoT) facilitates **smarter elevator designs** by integrating advanced sensors that monitor and optimize elevator performance.

2
IoT revolutioning Servitization of Elevator Systems
IoT capabilities enable **proactive maintenance** practices, reducing downtime and enhancing overall service reliability through predictive analytics.

3
Challenges in Integrating IoT on Existing Elevator Systems
Integrating IoT technologies into **legacy elevator systems** poses significant challenges including interoperability, security, and cost implications.

4
The Future of Smart Elevators IoT Integration Trends
As IoT technology evolves, future elevators will **increasingly rely** on **interconnected systems** to enhance user experience and operational efficiency.

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Importance of <u>real-time data</u> integration for enhanced elevator operational performance

Enhancing <u>User Experience</u> Through Data-Driven Insights

Integrating real-time data creates a **smoother ride experience**, as users benefit from reduced waiting times and improved operational reliability.

Real-Time Data to Optimize Elevator <u>Operations</u>

Real-time data integration significantly improves elevator performance by allowing for **immediate response** to operational anomalies and maintenance needs.

<u>Challenges</u> in Real-Time Data Implementation in Elevators

Despite its advantages, implementing real-time data systems presents challenges such **as complexity, data accuracy and costs.**

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IoT and Cloud Computing
to improve Elevators Servicing

Real-time data integration for enhanced elevator service & reduce risks!

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1
The Role of Digital Twins in Modern Elevator Installation Practices

The integration of digital twins in elevator installations is transforming the quality assurance process, **ensuring accurate installations through real-time data analysis**.

2
Leverage Cloud Computing for Data-Driven Decision Making in Elevators

Cloud computing facilitates the swift analysis of collected data, enabling technicians to make **informed installation decisions** that mitigate risks.

3
Preventive Measures Against Elevator Installation Accidents Using Data Analytics

By utilizing data analytics from digital twins, we can **preventively identify and rectify installation-related risks**, significantly enhancing elevator safety.

4
The Impact of IoT on Elevator Installation Quality and Accident Reduction

IoT technology connects various sensors, allowing for continuous monitoring of installation processes, **reducing the probability of accidents due to human error**.

Data Analysis for <u>Accident Prevention </u>in Elevator Operations

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1

Analyzing Elevator Accident Data to Identify Key Risk Factors
A comprehensive analysis of historical accident data reveals that a significant portion of elevator incidents are attributable to **door malfunctions**, underscoring the need for enhanced monitoring.

2

The Importance of Real-Time Data in Preventing Elevator Accidents
Real-time data collection and analysis can **predict potential malfunctions**, allowing for preventive measures to ensure **user safety during elevator service**.

3

Utilization of IoT for enhanced Safety Protocols in Elevators
By deploying advanced sensors, we can **monitor critical door features and environmental conditions**, providing insights that prevent accidents before they occur.

"If you went to bed last night as an industrial company, you're going to wake up today as a software and analytics company," – Jeff Immelt

OCTOBER 2014

<u>Digitization</u> for elevator safety enhancement

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The Role of Elevator Doors in Accident Statistics

Analysis of Fatal and Serious Elevator Accidents

Common Causes of Elevator Incidents

The Importance of Data in Enhancing Elevator Safety

Recent data indicates 70% of elevator callbacks are related to door issues, highlighting **a critical area for safety improvements** in the industry.

In 2023, the European Lift Association reported 382 user accidents, including **10 fatalities**, emphasizing the **need for enhanced safety measures.**

Operational data reveals that a significant number of accidents start from door malfunctions, emphasizing the **importance of proactive maintenance and installation quality.**

Collecting and analyzing **elevator operation data** can drastically improve safety measures, allowing for **predictive maintenance** and accident prevention.

Analysis of accident causes to develop effective prevention strategies in elevators

1

Evaluation of the Impact of Installation on Elevator Safety

Undetected **installation errors** are critical factors in elevator accidents, necessitating **improved training for technicians** to enhance installation quality.

2

Operational Data for Predictive Safety Measures

Analyzing operational data can reveal potential safety issues, allowing for **timely interventions before accidents occur**, thus increasing user safety.

3

Human Factors risk in Elevator Maintenance

The lack of experienced technicians poses a risk; **educational strategies must be implemented** to ensure proper maintenance and installation practices.

4

IoT Technology to Enhance Accident Prevention

The integration of IoT and cloud computing plays a pivotal role in monitoring elevator systems, enabling real-time data analysis for accident prevention.

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How data can help to improve safety protocols to reduce elevator accident rates?

1

Assessment of Current Safety Protocols and Their Efficacy
Review of the existing safety protocols provides insights into their effectiveness in reducing accident rates and areas for improvement (data can help!)

2

The Role of Predictive Maintenance in Safety Protocols
Implementing predictive maintenance strategies based on <u>data analysis</u> can significantly lower the likelihood of accidents due to equipment failure. Digitization is key.

3

Training and Knowledge Sharing Among Technicians
Enhanced training for technicians on safety protocols is essential to ensure adherence and to reduce accident risks in elevator operations. Digitization can support.

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Final reflection

DATA IS THE NEW OIL

DATA IS WATER

Thank you
for your attention!