GENERAL

# ascensori cosa cambia con le nuove en 81 20 e 81 50

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## Introduction

Elevators have become an indispensable part of modern architecture, providing seamless vertical mobility in high rise buildings, hospitals, hotels, and shopping centers. As buildings grow taller and user expectations rise, safety and performance standards evolve to keep pace. In Europe, the **EN 81** family of standards governs the design, construction, and testing of elevators and escalators. The latest revisions, **EN 81 20** and **EN 81 50**, introduce significant changes that affect manufacturers, installers, inspectors, and building owners alike. This article delves into what “ascensori cosa cambia con le nuove EN 81 20 e 81 50” means in practical terms, exploring the technical updates, safety enhancements, and regulatory implications that shape the future of elevator technology.

## 1. The EN 81 Family: A Quick Overview

The European Standard EN 81 is a comprehensive set of rules covering all aspects of elevator and escalator safety. It is divided into several parts, each addressing specific categories of equipment or stages of the life cycle. Key parts include:

- EN 81 20 – Requirements for the design and construction of passenger elevators and vertical platforms.
- EN 81 50 – Requirements for the performance, testing, and inspection of passenger elevators and vertical platforms.
- EN 81 60 – Maintenance and inspection of elevators.
- EN 81 70 – Safety and performance of escalators.

While earlier editions such as EN 81 2004 set the baseline, the 2022 revisions (EN 81 20:2022 and EN 81 50:2022) bring a refreshed approach that reflects contemporary engineering practices, new safety concerns, and digital integration.

## 2. From EN 81 2004 to EN 81 20 & EN 81 50: The Evolution

The transition from the 2004 edition to the 2022 revisions is not merely a renumbering exercise. It represents a holistic update that aligns with the **EN 81 20 and EN 81 50** frameworks:

1. Harmonized Structure: The new parts split design (EN 81 20) and performance (EN 81 50) into distinct documents, clarifying responsibilities across the supply chain.
2. Risk-Based Approach: Emphasis on risk assessment and mitigation throughout the life cycle, rather than relying solely on prescriptive measures.
3. Digital Integration: Inclusion of guidelines for data acquisition, remote monitoring, and cybersecurity for elevators equipped with IoT capabilities.
4. Accessibility and Sustainability: Updated requirements for energy efficiency, noise reduction, and user accessibility, reflecting EU directives on sustainability.

These changes collectively raise the safety bar while fostering innovation and operational efficiency.

## 3. Key Design and Construction Changes (EN 81 20)

### 3.1 Updated Structural Requirements

EN 81 20 now demands a more rigorous structural analysis, accounting for dynamic loads, seismic events, and extreme weather conditions. Manufacturers must provide detailed finite element models and validation reports, ensuring that elevator components can withstand the full range of operational stresses.

### 3.2 Enhanced Safety Devices

New safety devices, such as **dual redundant braking systems** and **smart door control logic**, are mandated. The standard also requires that safety devices be independently tested and certified, reducing the risk of single point failures.

### 3.3 Improved Fire Safety

Fire safety provisions have been strengthened, particularly in the design of fire resistant shafts, fire stop seals, and emergency lighting. The standard now specifies that elevator car interiors must maintain a minimum fire resistance rating of 30 minutes under specified conditions.

### 3.4 Accessibility and User Experience

Elevator interiors must now meet stricter accessibility criteria, including tactile floor markings, audible signals, and sufficient clearances for wheelchair users. User interface design is guided by human centered principles to improve usability for all demographics.

## 4. Performance and Testing Enhancements (EN 81 50)

### 4.1 Comprehensive Performance Testing

EN 81 50 introduces a structured testing regime covering:

- Speed and acceleration limits across all operating modes.
- Load capacity verification under various configurations.
- Door operation cycles, including fail safe door closing times.
- Vibration and noise level assessments.

Each test must be documented and traceable, with results logged in a digital database for audit purposes.

### 4.2 Remote Monitoring and Diagnostics

Elevators equipped with **IoT modules**must support remote diagnostics. The standard requires that data streams—such as motor temperature, door status, and cabin vibration—be securely transmitted to a central monitoring system, enabling predictive maintenance.

### 4.3 Cybersecurity Requirements

With increased connectivity comes vulnerability. EN 81 50 now includes a cybersecurity framework, mandating secure communication protocols, firmware update mechanisms, and access controls to prevent unauthorized tampering.

### 4.4 Energy Efficiency

Energy consumption is now a measurable performance metric. Elevators must demonstrate compliance with **EU Energy Label** criteria, including regenerative braking systems and energy saving standby modes.

## 5. Installation and Commissioning Adjustments

Installation practices must align with the new standard’s emphasis on documentation and traceability. Key changes

include:

- Detailed installation manuals that reference the specific EN 81 20 and EN 81 50 clauses.
- Commissioning tests that verify all safety devices and performance parameters before handover.
- Requirement for a certified commissioning engineer to sign off on the elevator, ensuring compliance across all life cycle stages.

## 6. Maintenance and Inspection Updates (EN 81 60)

While the maintenance part remains unchanged, its interaction with the new design and performance parts has intensified:

1. Predictive Maintenance: Data from remote monitoring must be used to schedule maintenance proactively, reducing downtime.
2. Inspection Frequency: High risk components identified in risk assessments may require more frequent inspections.
3. Documentation: Maintenance logs must include digital timestamps and engineer signatures, facilitating compliance audits.

## 7. Impact on Manufacturers

Manufacturers face several challenges and opportunities:

- Design Innovation: The risk based approach encourages the development of new safety technologies and smarter control systems.
- Certification Costs: Additional testing and documentation increase upfront costs, but the long term benefits include reduced liability and market differentiation.
- Supply Chain Coordination: Parts suppliers must also comply with the updated standards, requiring tighter collaboration and quality management.
- Market Advantage: Elevators certified to EN 81 20 and EN 81 50 are more attractive to developers seeking compliance with EU sustainability directives.

## 8. Implications for Building Owners and Developers

Owners and developers must consider the following when selecting elevator systems:

- Compliance Assurance: Verify that the elevator model is certified to the latest EN 81 20 and EN 81 50 versions.
- Lifecycle Cost Analysis: While initial costs may be higher, energy savings and reduced maintenance can lower total ownership costs.
- Regulatory Alignment: New building codes often incorporate EN 81 standards; using compliant elevators helps avoid future retrofits.
- Insurance Premiums: Insurers may offer lower premiums for elevators meeting the latest safety criteria.

## 9. How to Ensure Compliance

Compliance involves a coordinated effort across design, procurement, installation, and maintenance:

1. Pre Design Consultation: Engage with certified engineers early to interpret EN 81 20 clauses relevant to your project.
2. Supplier Verification: Request certificates of conformity and audit reports from suppliers.
3. Installation Audits: Conduct independent inspections during installation, ensuring that all safety devices are correctly installed.

4. Commissioning Documentation: Maintain a comprehensive commissioning report that references EN 81 50 test results.
5. Ongoing Training: Provide training for maintenance staff on new diagnostic tools and cybersecurity protocols.

## 10. Future Trends and the Path Forward

The evolution of EN 81 standards reflects broader trends in the elevator industry:

- Smart Elevators: Integration of AI for predictive maintenance and adaptive passenger flow management.
- Energy Positive Systems: Use of regenerative drives and renewable energy sources to offset building consumption.
- Modular Construction: Prefabricated elevator modules that reduce on site installation time and improve quality control.
- Global Harmonization: Efforts to align EN 81 with other international standards (e.g., ANSI/ASME) to streamline global supply chains.

## Conclusion

The shift to **EN 81 20** and **EN 81 50** marks a pivotal moment in elevator safety and performance. By adopting a risk based, data driven approach, these standards elevate the safety expectations for passengers and operators while fostering innovation across the industry. For manufacturers, the changes present both a challenge and an opportunity to differentiate through advanced safety features and digital integration. Building owners and developers benefit from reduced operational costs and enhanced compliance with evolving regulatory frameworks. Ultimately, “ascensori cosa cambia con le nuove EN 81 20 e 81 50” encapsulates a comprehensive upgrade that safeguards users, streamlines maintenance, and supports the sustainable growth of modern vertical mobility. As the industry embraces these updates, elevators will continue to rise—both literally and figuratively—into a safer, smarter, and more energy efficient future.


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