

Eiffel Tower Knowledge Base

Overview

The Eiffel Tower (La Tour Eiffel) is an iconic wrought-iron lattice tower located on the Champ de Mars in Paris, France. It stands as one of the most recognizable structures in the world and serves as a global cultural icon of France.

Historical Background

Construction

- **Designer:** Gustave Eiffel and his company
- **Engineers:** Maurice Koechlin and Émile Nouguier designed the structure
- **Architect:** Stephen Sauvestre contributed architectural elements
- **Construction Period:** January 28, 1887 – March 31, 1889
- **Opening Date:** March 31, 1889
- **Purpose:** Built as the entrance arch for the 1889 World's Fair (Exposition Universelle), celebrating the 100th anniversary of the French Revolution

Initial Reception

- Many Parisian artists and intellectuals initially criticized the tower, calling it an eyesore
- The tower was supposed to be dismantled after 20 years but was saved due to its value as a radio transmission tower
- Over time, it became beloved and is now the most-visited paid monument in the world

Physical Specifications

Dimensions

- **Total Height:** 330 meters (1,083 feet) including antennas
- **Original Height:** 300 meters (984 feet) to the tip
- **Base:** 125 meters (410 feet) square
- **Weight:** Approximately 10,100 tons (metal structure)
- **Total Weight:** About 10,000 tons of iron framework

Structure

- **Material:** Wrought iron (puddled iron)
- **Number of Parts:** 18,038 metal parts
- **Rivets:** 2.5 million rivets used in construction

- **Levels:** Three platforms accessible to visitors
 - First level: 57 meters (187 feet)
 - Second level: 115 meters (377 feet)
 - Third level (top): 276 meters (906 feet)
- **Stairs:** 1,665 steps to the top
- **Elevators:** Multiple elevators serving all levels

Design and Engineering

Innovative Features

- Revolutionary use of lattice iron framework
- Wind resistance design allowing the tower to sway slightly in strong winds
- Four curved base pillars create a stable foundation
- Hydraulic elevator system (innovative for its time)

Paint and Maintenance

- Repainted every seven years with about 60 tons of paint
- Three shades of brown are used, darker at the bottom and lighter at the top
- Has been painted different colors throughout history, including reddish-brown and yellow

Visitor Information

Tourism

- **Annual Visitors:** Approximately 7 million visitors per year
- **Total Visitors:** Over 300 million since opening
- **Most Visited:** Most-visited paid monument in the world

Levels and Attractions

First Level (57m)

- Glass floor sections
- Educational exhibits about the tower
- Restaurants and gift shops
- Immersive film experience

Second Level (115m)

- Best views for photography

- Restaurants including the famous Jules Verne restaurant
- Gift shops and viewing galleries

Third Level (276m)

- Gustave Eiffel's restored office
- Champagne bar
- Panoramic views up to 70 km on clear days
- Summit accessible by elevator only

Cultural Significance

Symbol of France

- Most recognizable landmark of Paris and France
- Featured in countless films, photographs, and artworks
- Symbol of romance, innovation, and French culture

In Popular Culture

- Featured in over 250 films
- Replicated in miniature around the world
- Inspiration for similar towers globally (Tokyo Tower, Blackpool Tower)

Events and Celebrations

- New Year's Eve light shows and fireworks
- Special illuminations for significant events
- Bastille Day celebrations

Technical Uses

Broadcasting

- Radio transmission since 1898
- Television broadcasting since 1957
- FM radio and digital television today
- Weather station and aviation beacon

Scientific Research

- Meteorological observations
- Physics experiments (wind resistance, gravity)

- Early wireless telegraphy experiments

Lighting and Illumination

Evening Illumination

- 20,000 light bulbs illuminate the tower at night
- Golden lighting system installed in 1985
- Sparkles for 5 minutes every hour after dark

Special Occasions

- Special colors and messages displayed for events
- Olympic rings during sporting events
- Solidarity colors for global causes

Interesting Facts

1. **Height Variations:** The tower can grow up to 15 cm taller in summer due to thermal expansion of the metal
2. **Wind Movement:** Can sway 6-7 cm in strong winds
3. **Color Changes:** Has been painted 19 different colors throughout its history
4. **Newspaper Stunt:** A journalist once rode a bicycle down the stairs from the first level
5. **Suicide Attempts:** Over 400 people have jumped from the tower (now prevented by barriers)
6. **Apartment:** Gustave Eiffel had a private apartment at the top
7. **Nazi Occupation:** Hitler ordered its demolition in 1944, but the order was never carried out
8. **Con Artist:** Victor Lustig "sold" the tower for scrap metal twice to different buyers
9. **Copyright:** Nighttime images of the illuminated tower are technically copyrighted in France
10. **Construction Workers:** No workers died during construction (remarkable for the era)

Conservation and Future

Preservation Efforts

- Regular maintenance and repainting
- Structural reinforcement projects
- Modernization of elevators and facilities

Challenges

- Rust and corrosion management
- Visitor capacity management

- Security enhancements in modern era

Recent Developments

- Bullet-proof glass barriers added for security
- Wind turbines installed (2015) for renewable energy
- Renovations for Paris 2024 Olympics

Visiting Practical Information

Access

- **Metro:** Bir-Hakeim (Line 6), Trocadéro (Lines 6, 9)
- **RER:** Champ de Mars - Tour Eiffel (Line C)
- **Bus:** Multiple lines serve the area

Tickets

- Advance booking recommended
- Different prices for elevator vs. stairs access
- Discounts for youth and children

Best Times to Visit

- Early morning or late evening for fewer crowds
- Sunset offers spectacular views
- Night visits show the sparkling illumination

Legacy

The Eiffel Tower transformed from a controversial temporary structure to an enduring symbol of human engineering achievement and artistic vision. It represents the spirit of innovation of the Industrial Age and continues to inspire architects, engineers, and millions of visitors worldwide. As one of the most photographed structures on Earth, it remains a testament to the power of bold vision and technical excellence.