# The History, Principle and Benefits of the Magnetic Levitation Train

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# Overview

- History of the system
- Two types of magnetic levitation system
- Test facility in Germany
- Benefits of the system

# History of the System

- Emile Bachelet – (1912) introduces "a levitating transmitting apparatus"
- Hermann Kemper – (1934) received a patent for a "monorail vehicle with no wheels attached"

  (later implemented in Germany and Japan)
- Peter Hochhausler (1970´s) develops induction linear motor as propulsion system

# Two Types of Magnetic Levitation System

Electromagnetic suspension – EDS

- Electromagnets attracted to ferromagnetic rails
- T-shaped guideway

Electrodynamic suspension – EMS

- Based on the repelling force of magnets
- U-shaped guideway

# Test Facility in Germany

- Elevated T-shaped guideway
- Acceleration to 300 km/h
- Vehicle approved for passenger transportation
- Visitors experience a ride


http://www.spiegel.de/international/germany/grossbild-543717-1133385.html

# Benefits of the System

- Higher speed than conventional trains
- Safer, more comfortable, more spacious
- Environmentally friendly
  - no direct pollution emissions
  - low noise emissions
  - land use possible

# Summary

- History
- Types
- Test facility
- Benefits

# Conclusion

- Safe and high speed means of transportation
- Based on the power of electromagnets
- Cost-effective, energy efficient, environment friendly

http://www.transrapid.de/cgi/en/basics.prg?session=2e0d4f5154316204_268668&a_no=46

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