

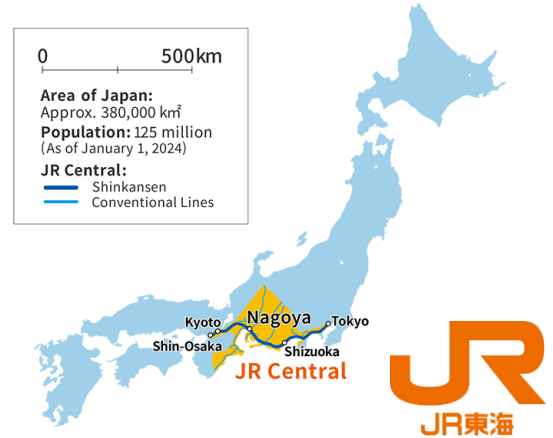
Course 1. Visit for Training center of Central Japan Railway Company and Ohito Station

Central Japan Railway Company (JR Central)

- Established: 1987 (following the privatization and breakup of the Japanese National Railways)
- Headquarters: 1-1-4 Meieki, Nakamura-ku, Nagoya, Aichi Prefecture, Japan
- Capital: approx. ¥112 billion
- Employees: Over 30,000 (more than 60,000 including group companies)

JR Central operates mainly in the Chūbu region of Japan (connecting Tokyo, Nagoya, and Osaka), and its activities are divided into several core sectors:

- Railway Operations (Core Business)
- Operation of the Tōkaidō Shinkansen (Tokyo–Nagoya–Shin-Osaka) Conventional line operations (Tōkaidō Main Line, Chūō Main Line, Kansai Main Line, Kisei Main Line, Takayama Main Line, etc.)
- Maintenance and management of railway infrastructure
- Chūō Shinkansen (Maglev) Project : Construction of the superconducting maglev line between Shinagawa and Nagoya (underway)



Training center of Central Japan Railway Company

The ten-story main building of the JR Central Training Center includes a wide range of facilities.

•**Training facilities (1–2F):** Driver training rooms for Shinkansen and conventional lines, station operation training rooms, ticketing and MARS rooms, and electric power/signal/communication training rooms.

•**Classrooms and shared facilities (1–4F):** 50 classrooms (30 trainees each), 2 large classrooms (100 trainees each), an audiovisual room, a gymnasium for physical and disaster-response training, and a cafeteria seating 400.

•**Dormitories (5–10F):** 525 trainee rooms and 48 instructor rooms.

The premises also feature **220-meter-long training tracks** for both Shinkansen and conventional lines, equipped with catenary systems, soundproof walls, derailment prevention guards, and ATS-PT ground facilities linked to the training rooms. The section also includes ballastless bridges for realistic practice.



World's first power transmission for commercial line operation through superconducting feeding system



Fig. 1 Overview of Superconducting Feeding System

<https://www.rtri.or.jp/eng/press/nr20240313.html>

- The “superconducting feeder system” is a power supply system for railways that uses superconducting cables in the feeder circuit. In conventional conductors, electrical resistance causes transmission losses and voltage drops. By exploiting superconductivity (zero or near-zero resistance), these losses can be minimized.
- Potential benefits include:
 1. Energy saving through reduced transmission losses
 2. Fewer substations required along the line, reducing infrastructure
 3. Stable voltage supply over long distances
 4. More effective use of regenerative braking power from trains

Demonstration on Izu Hakone Railway

The Izu Hakone Railway (Sunzu Line), together with the Railway Technical Research Institute (RTRI), has been conducting the world's first demonstration of a superconducting feeder system on a commercial line since FY2024.

Test section : Ōhito Station area, Sunzu Line

Cable length : Approx. 102 m superconducting cable

Cooling method : Liquid nitrogen (-196°C) to maintain superconductivity

Current capacity : Designed to carry 3,000 A or more with zero resistance

Trains supplied : 135 commercial trains per day (67 inbound, 68 outbound)

Period : From March 2024, continuing through FY2024