NIPPON SIGNAL

Rail Breakage Detection System

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Provides a low-cost rail breakage detection alternative to conventional track circuit detection when introducing wireless train control systems.

Challenges for railway operators

- Keeping conventional track circuits alongside CBTC results in duplicate equipment and increased costs.
- Maximize the use of existing equipment for a cost-effective implementation.

By utilizing the return current to the substation, conventional track circuit equipment becomes unnecessary.

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Monitoring method

Monitoring balance between left and right rails for return current.

Detection method

Breakage are detected where return currents differ, since the rail breaking point prevents return current flow.

Compact design

By utilizing the return current, detection is possible using only the receiving circuit.

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System Overview

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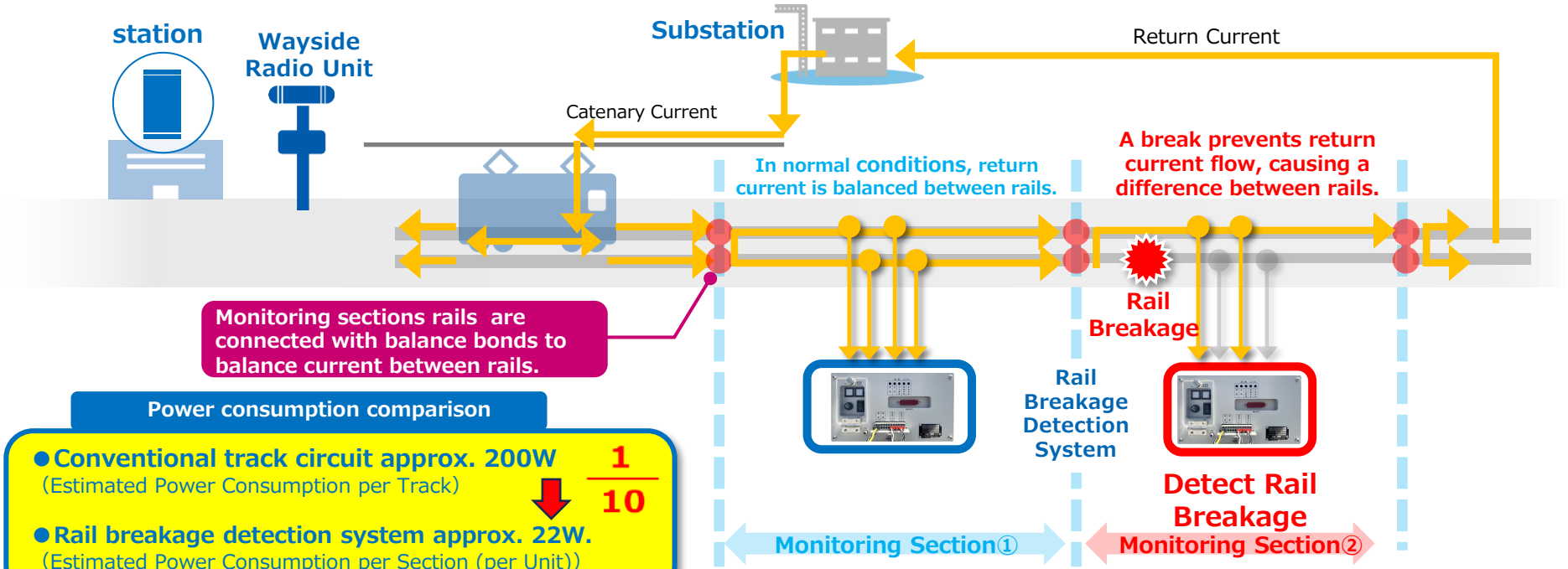
Detects rail breakage by monitoring the balance of return current between left and right rails.



Power consumption comparison

- **Conventional track circuit approx. 200W**
  (Estimated Power Consumption per Track)
- **Rail breakage detection system approx. 22W.**
  (Estimated Power Consumption per Section (per Unit))

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