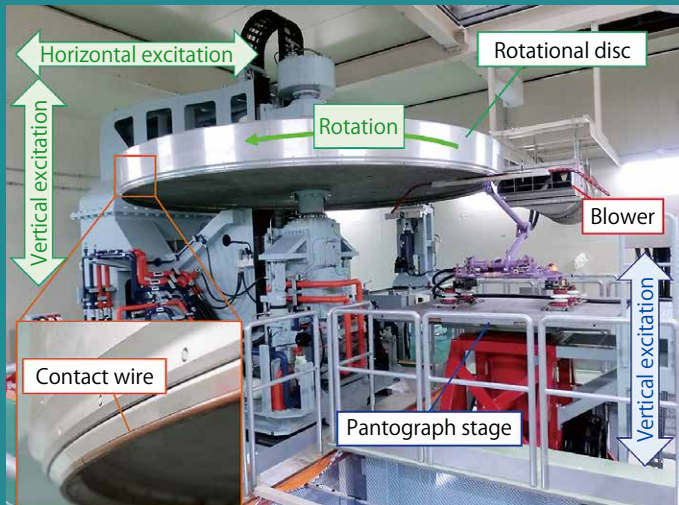


High-Speed Test Facility for Pantograph / OCL Systems



Appearance of HiPaC

Performance of HiPaC

Device	Specification		
Main Machine	Rotational speed	Max. 500 km/h	
	Vertical vibration	Frequency	≤ 27.8 Hz
		Amplitude	Max. 100 mm ^{*1}
		Waveform	Sine wave or other ^{*2}
	Horizontal vibration	Frequency	≤ 5 Hz
		Amplitude	Max. 300 mm ^{*1}
		Waveform	Triangular wave, sine wave, or other ^{*2}
Pantograph stage	Elevating amount	1600 mm	
	Vertical vibration	Frequency	≤ 10 Hz
		Amplitude	35mm ^{*1}
		Waveform	Sine wave or other ^{*2}
Environmental atmosphere controller	Temperature	-20 to +40 °C ^{*3}	
	Humidity	10 % to 90 %	
Blower	Wind speed	60 to 100 km/h	
Energizing device	Type	AC or DC	
	Voltage	100 to 600 V	
	Current	≤ 1000 A (10-step control)	

*1 Depends on the frequency.

*2 Can be vibrated with any waveform by inputting an external signal.

*3 When the main machine is active (controllable at -25 to +40 °C at a standstill)

RTRI has developed a new test facility “High-Speed Test Facility for Pantograph/OCL (Overhead Contact Line) Systems (HiPaC)” at our Kunitachi laboratory, in order to carry out the following research and development:

- Evaluate current collection performance of pantographs,
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- Develop pantographs for high-speed trains with low-noise and large current collection performance,
- Develop contact strips with improved wear resistance,
- Analyze causes of failure by reproducing power supply and environmental conditions, sliding, and vertical and lateral displacement of the contact wire.

To achieve these, HiPaC can carry a large current (up to 1,000 A) while reproducing high-speed sliding (up to 500 km/h). **Appearance of HiPaC** shows the appearance of HiPaC, which is composed of the following main components:

- Main machine: a rotating disk that reproduces the OCL lateral position, vertical vibration, and sliding.
- Pantograph stage: allowing an actual pantograph to be installed and reproducing the vertical vibration of the vehicle.
- Energizing device: supplying electricity to the pantograph.
- Environmental atmosphere controller: controlling the temperature and humidity in the test chamber.
- Blower: reproducing the cooling of the pantograph-head due to the oncoming wind during running.

Performance of HiPaC summarizes HiPaC’s performance. We intend to use HiPaC to develop a new pantograph with high performance.

(Tatsuya Koyama, Senior Researcher,
Current Collection)