Reducing Noise along Railway Lines

Improvement of the environment along railways: Basic thoughts on noise reduction

In the operation of trains, noise is created by the train cars moving through the air, by the wheels travelling on the rails, by the motors, etc. In order to reduce noise, we pursue various actions to improve both the trains and our ground equipment. JR East also endeavors to reduce noise during maintenance work on railways, civil engineering structures, etc., to further improve the environment along the lines.

Measures for the Shinkansen

In accordance with the Japanese government's Environmental Quality Standards for Shinkansen Railway Noise, JR East has taken many steps to reduce this noise, such as the installation of soundproof walls and sound-absorbent materials, rail grinding*1 and the modification of our railcars to operate more quietly. We have already completed the implementation of measures to reduce noise levels to 75 dB or lower in densely populated residential areas along our railway lines, and we plan to take further steps by expanding the scope of areas where noise levels need to be reduced to 75 dB or lower. Also, with the introduction of E5 type railcars, which were developed based on the results of running tests using the Shinkansen test train "FASTECH," JR East is working to improve the environment even as we increase train speed, including further reduction of noise and micro-pressure waves in tunnels*2.

*1 Rail grinding
A measure to smooth out uneven places in rails caused by wheels traveling over them. This reduces noise by controlling car vibration.

*2 Micro-pressure wave in tunnels
An explosive sound caused by compressed air being forced out of a tunnel when a Shinkansen enters it at a high speed. The sound is produced at the end of the tunnel.

Test train "FASTECH" uses a low-noise single arm pantograph.

Measures for conventional lines

We have implemented voluntary measures for conventional lines to minimize noise, installing long rails*1 and performing rail-grinding and wheel-truing*2. We also comply with the Japanese government's Policy on Noise Measures for Construction of New Conventional Railways or Large-Scale Remodeling when we engage in this kind of construction or modification of our conventional lines.

*1 Installing long rails
Rail joints are welded to make the length of a single rail more than 200 meters. With fewer rail joints, these rails reduce noise produced at joints when trains pass.

*2 Wheel truing
A measure to grind the unevenness of wheels caused by wear, to restore their circular shape.

Measures for maintenance work

As the maintenance work is usually done during night, we give advance notice about the schedule and details of the work to residents in surrounding areas. We also make utmost efforts to minimize noise by using modified equipment producing lower noise. On double-track lines, we carry out maintenance work on one track during daytime while trains in both directions use the other track. We also endeavor to lessen the need for maintenance itself by increasing the use of labor-saving tracks with wear-resistant rails.

To protect the environment along our railway lines from noise related to train operations and railway maintenance work, we implement measures systematically in accordance with the government's environmental standards and guidelines. We also continue our own similar efforts for tracks and trains on conventional lines, for which no standards are provided. We are determined to make further improvements to the environment along our railway lines by developing technology to reduce noise.