

1. Dry Grinding and Dust Suction System on-Board Vehicle for Tunnel Ceiling - Performance Verification and Field Application -

Toshiyuki Ishii, Kouichi Nishiyama, Tosikazu Awazu, Hiroaki Shiraishi

Reinforcement and repair works of the ceiling of urban expressway tunnels in keeping the traffic of the opposite lanes usually need to be carried out by humans only in short regulation times. Moreover, the prevention of dust scatter to the opposite lanes is required. Especially in the removal process of surfacing material such as coating film, the works with unnatural posture at high places pose various problems such as poor quality of the surface and degradation of the working environment. To solve these problems, the authors have developed a dry grinding and dust collection system on-board vehicle capable of mechanizing the tunnel ceiling surface treatment (grinding) process and preventing the scattering of dust. An experiment was conducted to verify the performance of the grinding and dust collection system, and the system was actually used at a tunnel spalling prevention work site. It has been confirmed that the newly developed system removes surface coating completely to produce higher surface quality, improves the working environment by preventing the scattering of dust and helps achievements of labor-saving and safety goals.

Key words: repair works, tunnel ceiling, surface treatment, mechanization, dust scattering suppression