

5. Abrasive blasting Systems for Curved Concrete Surfaces - An Overview and Performance Assessment -

Hiroki Tanaka, Kouichi Nishiyama, Toshiyuki Ishii

Blasting work (i.e., the removal of fragile surface layers) in repair/reinforcement work for highway tunnels and other such concrete facilities is performed manually to prevent dust scattering into lanes close to passing traffic. This blasting work entails repetitive tasks and cramped postures at various heights and poses various associated problems, including inefficiency, defects in processing surfaces, and deterioration of working circumstances. To improve efficiency and working environments, we developed and applied an automated blasting system to various renovations of road tunnels and railway facilities. We then extended this system to allow application to curved concrete surfaces as well as flat surfaces.

We undertook a study involving a full-scale mockup tunnel to confirm the system performance. The results demonstrated that automated blasting, even involving curved concrete surfaces, allowed blasting with minimal variation in surfaces treated. This approach also enhances safety by eliminating risks related to dust aspiration and work at elevations.

Key words: repair work, surface blasting and cleaning, automation, efficiency improvement, dust prevention