

2. The Development of Air Purification System using the Electrostatic Precipitator for Tunnelling

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“The guideline for the dust measurement has been decided. In order to attain the dust concentration value ($3\text{mg}/\text{m}^3$ or less) desired from the guideline, two methods have been developed using the electrostatic precipitator already put in practical use which dust will reduce concentration near the tunnel face.

The first is the method of installing the isolation curtain from near tunnel face to the electrostatic precipitator which was set about 70m point from the tunnel face. Then, the dust containing air pass between a curtain and a tunnel side wall and is intake to the electrostatic precipitator effectively.

The second method is installing the movable type electrostatic precipitator near the tunnel face. The movable type electrostatic precipitator was newly developed which is small and easy to transfer loaded on the cruller type carrier.

These methods applied to two tunnel sites and dust reduction efficiency was examined. In the measurement result, the dust concentration at 50m point from the tunnel face became $3\text{mg}/\text{m}^3$ or less and the dust concentration value desired from the guideline has been attained.

Key words: rock tunnel, electrostatic precipitator, tunnel ventilation, dust measurement