

Starlight Sensor System to Detect and Control the Height of Placed Lining by Light

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Summary

The Starlight Sensor System visualizes the height of the lining real-time as it is placed, while pouring the concrete into the tunnel lining form. The system uses innumerable illuminance sensors and LED installed on the surface of the centering to detect the height of lining as it is being placed.

Specifications

Fig. 1 shows the positions of the illuminance sensors and LED. The light coming from the LED on the surface of the centering brightens the construction space and reflects on the waterproof sheet to be irradiated on the illuminance sensors. When the concrete gets poured into the tunnel lining form, the light is obstructed and does not reach the sensors. As the electric resistance values change according to the intensity of the light, user can determine that the pouring of concrete was completed to that position. Setting a timer on the form vibrator to activate at the positions where the pouring was finished would allow automation of compaction.

System in Use

Fig. 2 is the UI of the system. The parts colored blue are the places where the concrete was poured. The actual construction space would be illuminated by the many LED installed, and this also contributed in increasing work efficiency and safety.

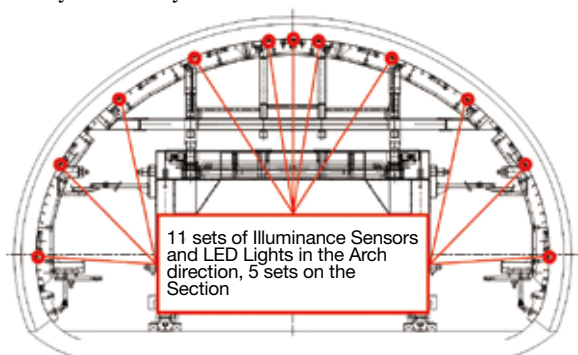


Fig. 1 Positions of the Illuminance Sensors and LED Lights at the Centering



Fig. 2 Sample Image of the System UI