

100% Electric Shotcrete Rig with SmartScan System

The Process

Support for tunnel structures is a necessity in excavation of the Rozelle Interchange Project's 22.4km of tunnels.

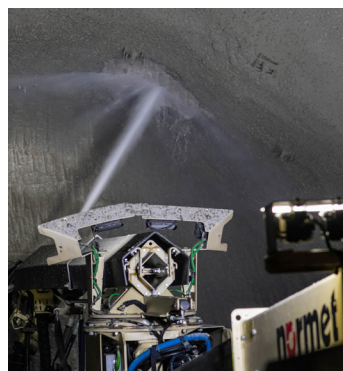
Excavation in tunnels is normally conducted by drilling and installing rockbolts and subsequently spraying the unsupported ground with a lining of shotcrete.

Shotcrete spraying is traditionally conducted using a diesel or diesel-electric hybrid drive plant. At the Rozelle Interchange Project, the John Holland CPB Joint Venture (JHCPB) is trialling the world's first production model, 100% electric shotcrete machine.

The Spraymec 8100 VC SD by NORMET is currently in operation at JHCPB's Tunnel Site A and is a cleaner solution that reduces diesel particulate emissions in the tunnel environment. This electro-hydraulic self-propelled mobile sprayer also optimises the spraying of shotcrete with the integration of instant quality control (SmartScan) systems.

Relying on stored electric battery power when moving in the tunnel, the Spraymec's battery charges while spraying and plugged into a 1000-volt cable. Once spraying is complete, the machine can be unplugged and driven to the next location.

The SmartScan system provides a high resolution, LiDar scan of the area before, during and after shotcrete application, enabling better control of the layer thickness and reducing material waste.



Benefits

Environmental:

- The Spraymec enables more efficient use of materials and reduces wastage
- No diesel emissions due to the elimination of 120-kW diesel engine

Social (operator comfort and health):

- Noise generation is significantly reduced when compared to traditional diesel engine rigs
- Reduced worker exposure to carcinogenic diesel emissions
- Easier to operate and increased accuracy and efficiency of spray

Economic:

- Cost saving: Improved thickness control at the face reduces reworks and material waste while providing cost and program gains
- Time saving: Smart electric system provides digital access to real-time data, accessible from desktop while potentially reducing the amount of time required to perform quality checks on site

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