

PM300 – Tilting Robot



We were approached by the Main Contractor (BAM Nuttall and Taylor Woodrow) to assist them in overcoming the difficulties in constructing an SCL (Sprayed Concrete Lined) escalator tunnel.

The tunnel project, which was commissioned in order to relieve congestion at one of the busiest stations on the London Underground network, formed part of London Underground's £741 million Victoria Station Upgrade (VSU).

We worked with manufacturer Putzmeister Iberia to produce a tracked spraying machine that could work on an inclined surface. Most inclined tunnels are driven from the lower level in an uphill direction. The VSU project demanded that their 30 degree escalator tunnel had to be constructed downhill. This meant the machine had to be redesigned and modified to accommodate this change in construction.

The modification was completed at Shotcrete Services' workshops and the machine was tested at their facility to check stability and functionality, prior to it being delivered to site in November 2013. The machine successfully completed the works and was then used on a number of similar tunnels on the Crossrail project.

KEY ASPECTS:

Bed tilts to allow operation on slopes of up to 45 degrees

Cable remote (can be replaced with wireless)

Electric drive during spraying operations

Diesel drive for travelling

CLIENT
Crossrail

This project highlighted the fact that the machine should have the ability to complete tunnels in either an uphill or downhill gradient.

Shotcrete then started working with Putzmeister again to produce such a machine. The second generation machine incorporated a number of other elements that had resulted from operational feedback.

This revised machine was built and tested over a 6-month period during the start of 2015; and in October 2015 the first of the revised machines was delivered to BMW (Balfour Beatty Morgan Vinci) for the construction of the escalator tunnels for Liverpool Street London Underground Crossrail connections.

Over the 45 years that Shotcrete Services has been spraying concrete, the Company has not only developed the 'wet' shotcrete process, but has been at the forefront of continued development of the spraying equipment. The Company is also involved in the development and trailing of new admixtures and supplementary products such as fibres and waterproof membranes.

