



UNIVERSITY OF
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Midlands Geotechnical Society Newsletter

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In This Issue

- December meeting

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Honorary Secretary:

Alan Turner

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Tel. 01902 670938

Meeting Venue

Lectures start: 7pm

Location:

HAWORTH BUILDING,

University of Birmingham B15 2TT

Refreshments are available prior to the meeting in the Shell lounge, Department of Mechanical and Civil Engineering, from 6:15 onwards

Registered Charity Number: 514610

December 7th Meeting

The Origins and Development of the New Austrian Tunnelling Method

By Dave Hindle, Director OtB Engineering Limited.

Widely used and often controversial, the New Austrian Tunnelling Method, or "NATM" for short, is frequently misunderstood as to its origins (the phrase "neither new, nor Austrian" is often quoted) and its application in both hard rock and soft ground tunnelling; with similar systems having been developed such as the Norwegian method of Tunnelling or "NMT" and the British version called the Sprayed Concrete Lining or "SCL" method.

The origins of the NATM can be traced back to the mid-19th century Czechoslovakian coal mining industry, but it was the invention and early use of shotcrete in mining in the USA around 1910 that eventually led to its application in high-stress rock tunnelling in Austria in the 1950s then to soft ground tunnelling in Germany in the following decade.

Today the NATM, or at least versions of it, is commonly used and referred to worldwide in almost every branch of tunnelling, from caverns for particle accelerators to highways and railways through mountain ranges; or from urban sewers to cable tunnels and metros. Yet, whilst innumerable case histories have been reported, there is little written in terms of its methodology and application, and even less as a universally accepted standard, although several attempts have been made to produce one.

This lecture, therefore, attempts to define more clearly the origins, principles, application and possible future of what is possibly the most innovative, versatile and spectacular form of tunnelling, the NATM.

David Hindle

David has over 35 years of experience in tunnel engineering, mining and engineering geology.

Following a number of years in the mining and water well drilling industries overseas he returned to the UK where he was engaged by Howard Humphreys as a Principal Engineer on a wide variety of projects culminating in the investigation, design and supervision of the A55 Pen-y-Clip and Penmaenbach tunnels in North Wales. Following a period of study, David was appointed Technical Director of Travers Morgan responsible for the project management of the detailed design of Liverpool Street Station for Crossrail and the investigation and design of a third Blackwall Tunnel beneath the River Thames.

As the Managing Director for Dr Sauer Company, he was the project director responsible for the design of the shotcrete (NATM) supported tunnels for complex mined London Bridge Station and the refurbishment design of Brunel's Thames Tunnel. Prior to co-founding OtB, David was an independent consultant and actively involved as organiser and Chairman of the regular major tunnelling conferences held in the UK.

As a Director of OtB he has managed a number of significant tunnelling projects in London, including a Peer Review of the Thames Tideway project and tunnel strengthening works on the Jubilee Line. David is currently engaged by Bechtel/Enka JV as tunnelling consultant on a major highway project in Albania

involving a 5-kilometre long twin bore tunnel through squeezing rock and by the Concessionaire for highways schemes on the island of Madeira, which include 22 rock tunnels. In addition, he is involved in the design and construction of railway embankment strengthening works and step free access to Green Park underground station for Tubelines in London. David also finds time to mentor junior officers in the Royal Engineers and Royal logistics Corps who are working towards gaining a Masters degree and Chartered Engineer status.

This lecture has been supported by sponsorship from:

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