

# Peter Broomfield

# TBM Operator / Electrician

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| <b>Name</b>          | Peter Broomfield  | <b>Qualifications / Skills</b>  |
| <b>Age / DOB</b>     | 28 yrs / 8 July 1979  | IEE Regulations 16 <sup>th</sup> edition  |
| <b>Marital stat.</b> | Single  | More than 12km experience as microtunnelling machine operator in a wide variety of soil conditions                              |
| <b>Nationality</b>   | British   | Experience of TBM installation and maintenance with Herrenknecht slurry and EPB machines – pipejacking and segmental tunnelling |
| <b>Address</b>       | 19 Mandleston Close<br>Tunstall Grange<br>Sunderland, SR2 0EG, UK |   |

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## Employment History

| <b>Dates</b>         | <b>Location</b> | <b>Role</b>                      | <b>Information</b>  |
|----------------------|-----------------|----------------------------------|---|
| Mar 2007<br>present  | Wales           | Microtunnelling machine operator | <b>Barhale Ltd</b><br><br>Operate Herrenknecht AVN slurry machines<br>AVN1500 – 120m motorway crossing<br>AVN1600 – 280 / 320m drives including river crossing<br>AVN1800 – several drives up to 360m long including both road and river crossings                          |
| Jan 2007<br>Mar 2007 | Saudi Arabia    | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN2000 for 600m long drive inclusive curve in Jeddah  |
| Aug 2006<br>Nov 2006 | Holland         | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN1400 with gyro compass under housing and local roads with minimum of 2,5m cover in Appeldoorn<br>580m drive with 2 curves<br>940m drive with 4 curves – longest drive in world to date for a machine of this diameter |
| May 2006<br>Jul 2006 | Jersey, USA     | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN1000<br>Installation of additional slurry pump and frequency inverter drive   |
| Nov 2005<br>May 2006 | Baltimore, USA  | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN1200TC in granite (200MPa)<br>5 drives varying from 250 to 300m length<br>Installation of special slurry flushing system  |
| Sep 2005<br>Nov 2005 | N Carolina, USA | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN2000 with diameter increasing kit to 2,500mm pipe ID<br>3 drives up to 180m length including railway, motorway and airport runway crossing  |
| Apr 2005<br>Sep 2005 | California, USA | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN1200<br>9 drives totalling approx 2,700m in clay, sand, gravel with minimum cover 2,5m  |

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| Sep 2004<br>Apr 2005 | Warsaw,<br>Poland | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN slurry and EPB machines<br>AVN1500 – 450m drive in sands and clay<br>AVN1600 – 2 x 400m drives in sands and clay<br>EPB1600 – 4 x drives 270 / 310 / 380 / 590m long all under main highway. Longest drive included two curves with gyro compass  |
| Apr 2004<br>Jul 2004 | Turin, Italy      | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN1600<br>2 x drives up to 300m long in gravel and boulders  |
| Jan 2004<br>Apr 2004 | Bilbao,<br>Spain  | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN1200   |
| Oct 2003<br>Dec 2003 | Kuwait            | Microtunnelling machine operator | <b>Herrenknecht AG</b><br><br>Operate Herrenknecht AVN1200   |
| Sep 2001<br>Jun 2003 | Holland           | Electrician                      | <b>Comol Tunnelbouw<br/>Pannerdensch Canal</b><br><br>Shift electrician for maintenance and repairs of Herrenknecht Slurry shield 9,765mm diameter. Also installation and recovery of equipment on a major project involving two parallel 1,6km drives under river   |
| Jan 2001<br>Aug 2001 | Sunderland,<br>UK | Electrician                      | <b>Skanska International Civil Engineering AB<br/>Sunderland Metro Link extension</b><br><br>Installation and testing of fire suppression systems at main railway station conversion   |
| Jul 2000<br>Dec 2000 | Swansea,<br>Wales | Electrician                      | <b>ByZak Contractors Ltd</b><br><br>Installation and maintenance of wide range of equipment including submersible pumps, transformers, battery locomotives, gantry cranes. Experienced in establishment of construction sites for cabins, lighting etc<br>Familiar with the use of SWA, PVC, mineral insulated and flexible type 7 mining cables for high and low voltage installations        |
| 1998<br>July 2000    | Cardiff,<br>Wales | Electrician                      | <b>ByZak Contractors Ltd<br/>Cardiff Sewerage and Wastewater Treatment Plant</b><br><br>Electrical apprenticeship including part time college studies<br>Installation and maintenance of three Herrenknecht TBM along with all support equipment including separation plant, generators, pumps etc<br>AVN1600 x 3,7km Pipejack<br>AVN2000 x 3,6km Pipejack<br>EPB2400 x 2,6km Segmental tunnel |
| 1996-1998            | Sunderland        | Engineering trainee              | <b>Herrenknecht International Ltd</b><br><br>Repair and overhaul of Herrenknecht TBM at workshops<br>Period of training at main works in Germany for preparation of TBM for rental projects in UK  |