

# MACIEJ OCHMAŃSKI, PhD



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## TECHNICAL EXPERTISE

In 2017 he received a double PhD degree in Civil Engineering at Silesian University of Technology (Poland) and University of Cassino (Italy). At present he is Assistant Professor of Geotechnical Engineering at the Silesian University of Technology (Poland) and PostDoc at the Charles University in Prague (Czech Republic). His research activity is focused on solving complex static and dynamic soil mechanics problems using novel numerical approaches. He has wide experience in numerical modelling of various complex geotechnical problems, e.g. tunnelling and deep excavation structures, off-shore wind turbines foundations subjected to monotonic and cyclic loading or computational fluid dynamics simulations for jet grouting. Currently, as a PostDoc in international (Czech Republic – China) research project he is involved in developing of new implicit & explicit constitutive models for soils dynamic response, such as High Cycle Accumulation (HCA) models, and numerical simulations of off-shore wind turbine structures subjected to extreme environmental loadings.

## EDUCATION

### **Doctor of Philosophy (PhD)** – double doctoral program

*Silesian University of Technology*, Faculty of Civil Engineering; Gliwice, Poland 2012 – 2016  
*University of Cassino and Southern Lazio*, Faculty of Civil Engineering; Cassino, Italy 2013 – 2017

Dissertation topic: “*Numerical analyses of the effects of tunnels construction*”.

### **Master of Civil Engineering (MSc)**

*Silesian University of Technology*, Faculty of Civil Engineering; Gliwice, Poland 2006 – 2012

## ABROAD ACTIVITIES

### **Charles University**

01.10.2019 – to date

Postdoctoral position on “*Constitutive and numerical modelling of soil cyclic loading with application to foundations of wind turbine structures*”. Coordinator: doc. RNDr. **David Mašín**, Ph.D.

### **Istanbul University – Cerrahpaşa**

12.03.2019 – 18.03.2019

Teaching activity within the ERASMUS+ program

### **University of Cassino and Southern Lazio**

10.01.2018 – 19.01.2018

Teaching activity within the ERASMUS+ program

### **University of Cassino and Southern Lazio**

16.09.2013 – 05.05.2014

Research activity during the PhD double degree program within LLP/Erasmus program

## EXPERIENCE

### **PostDoc, geotechnics**

10.2019 – to date

*Charles University*, Prague, Czech Republic

### **Assistant professor, geotechnics**

10.2010 – to date

*Silesian University of Technology*, Gliwice, Poland

<b>Assistant, geotechnics</b> Silesian University of Technology, Gliwice, Poland	10.2016 – 09.2018
<b>Consultant</b> TECHNITAL Sp.A. S.A., Warszawa, Poland	07.2015 – 06.2018
<b>Technical assistant, geotechnics</b> INORA sp. z o.o., Gliwice, Poland	06.2012 – 05.2013
<b>Trainee, geotechnics</b> Geovil Ltd., Szentendre, Hungary	07.2011 – 10.2011
<b>Trainee, motorways</b> BPBK Trakt, Katowice, Poland	09.2009 – 02.2010
<b>Trainee, bridges</b> MSc Ltd., Budapest, Hungary	07.2009 – 09.2009
<b>Trainee, formworks</b> "BUDOSPRZĘT" SP. Z.o.o., Bytom, Poland	08.2008 – 10.2008

## RELATED PUBLICATIONS

**Ochmański M.**, J. Duque, D. Mašin, J. Duque, Y. Hong, L. Wang (2021): Performance of tripod suction bucket foundations for offshore wind turbines: a numerical study. *Géotechnique Letters* - accepted for publication.

Duquea J., **Ochmański M.**, Mašin D., Hong Y., Wang L. (2021): On the behavior of monopiles subjected to multiple episodes of cyclic loading and reconsolidation in cohesive soils. *Computers and Geotechnics*, vol. 134, pp 104049

**Ochmański M.**, Spacagna R. L., Modoni G. (2020): *3D numerical simulation of consolidation induced in soft ground by EPB technology and lining defects*, *Computers and Geotechnics*. Vol. 128: 2020, pp: 103830

**Ochmański M.**, Modoni G., Bzówka J. (2018): *Automated numerical modelling for the control of EPB technology*, *Tunnelling and Underground Space Technology*. Vol. 75: 2018, pp. 117-128

**Ochmański M.**, Modoni G. and Bzówka J. (2015): *Numerical analysis of tunnelling with jet-grouted canopy*, *Soils and foundations*, Vol. 55, Issue 5, pp. 929-943

## OTHER PUBLICATIONS:

Salvatore E., Spacagna R.L., Andò E., **Ochmański M.** (2019): *Strain localization in triaxial tests on sand studied with geostatistical analyses of the porosity distribution*, *Géotechnique Letters*. Vol. 9, Issue 3, pp. 1-18

Toraldo C., Modoni G., **Ochmański M.**, Croce P. (2017): *The characteristic strength of jet grouted material*, *Géotechnique*. Vol. 68, Issue 3, pp. 262-279, doi: 10.1680/jgeot.16.P.320, **Impact Factor: 2.395**

Modoni G., Flora A., Lirer S., **Ochmański M.** and Croce P. (2016): *Design of jet grouted excavation bottom plugs*, *Journal of Geotechnical and Geoenvironmental Engineering (ASCE)*, s. 04016018, doi: 10.1061/(ASCE)GT.1943-5606.0001436, **Impact Factor: 2.464**

**Ochmański M.**, Modoni G. and Bzówka J. (2015): *Prediction of the diameter of Jet Grouting columns with Artificial Neural Networks*, *Soils and foundations*, Vol. 55, Issue 2, pp. 425-436

**Ochmański M.** (2018): *Long-term settlement induced by EPB tunnelling studied with numerical simulations*, *Annals of Warsaw University of Life Sciences – SGGW. Land Reclamation*. Vol. 50: 2018, No. 2, pp. 139-157, doi: 10.2478/sggw-2018-0012

Modoni G., Flora A., Lirer S., **Ochmański M.**, Croce P. (2018): *Projektowanie uszczelnienia dna wykopu wykonanego w technologii jet grouting*, *Inżynieria Morska i Geotechnika*. Vol. 39: 2018, No. 2, pp. 83-99 (in polish)

**Ochmański M.** (2018): *Szacowanie osiadania powierzchni terenu wywołanego drążeniem tunelu tarczą zmechanizowaną TBM*, *Materiały budowlane*, Vol. 1: 2018, No. 2, pp. 28-30, doi: 10.15199/33.2018.02.07 (in polish)

**Ochmański M.**, Bzówka J., Modoni G. (2017): *Zautomatyzowany model numeryczny służący do kontroli procesu drążeniu tunelu tarczą EPB*, *Inżynieria Morska i Geotechnika*. Vol. 38: 2017, No. 6, pp. 290 (in polish)

**Ochmański M.**, Modoni G., Toraldo C. (2017): *Effetti dello scavo meccanizzato di gallerie studiato con modelli numerici*,

XXVI Convegno Nazionale di Geotecnica – La geotecnica nella conservazione e tutela del patrimonio costruito, Roma.

**Ochmański M.**, Bzówka J., Modoni G. (2017): *Przegląd metod służących do szacowania osiadań powierzchni terenu wywołanych procesem tunelowania*. In: *Analizy i doświadczenia w geoinżynierii*. Ed: Joanna Bzówka and Mariana Łupieżowicz. Gliwice: Wydaw. Politechniki Śląskiej, 2017, pp. 353-360. (in polish)

**Ochmański M.**, Bzówka J., Modoni G. (2017): *Problemy i wyzwania związane z projektowaniem tuneli drążonych tarczami TBM w podłożu gruntowym*. In: *Naprawy i wzmocnienia konstrukcji budowlanych*. Geotechnika. Tom II. PZITB, 2017, pp. 91-114, ISBN 83-923401-7-5. (in polish)

**Ochmański M.**, Salamak M., Waniek G. (2017): *Tunnel in Gliwice – Structure and technology of construction*. Mosty, 2016 nr. 1, pp. 64-69, ISSN 1896-7663. (in polish)

**Ochmański M.**, Modoni G., Bzówka J. (2016): *Effects of mechanized tunnelling studied with numerical models*, 13th International Conference Underground Construction Prague 2016, 3rd Eastern European Tunnelling Conference, Prague, Czech Republic, 23-25 May 2016.

**Ochmański M.** (2015): *Predictive tools for the ground deformation induced by EPB tunnelling: a comparative study*, 24th European Young Geotechnical Engineers Conference, Durham, Great Britain, 11-12 September 2015.

**Ochmański M.**, Bzówka J. and Modoni G. (2015): *Numerical analyses of the tunnel with jet grouting canopy*. Inżynieria Morska i Geotechnika. Vol. 36: 2015, No. 3, pp. 406-413. (in polish)

**Ochmański M.** (2015): *Numerical model for slurry shield TBM tunnelling*, Proceedings of the XV Scientific Conference for Civil Engineering PhD Students, Szczyrk, Poland, 7-8 May 2015.

**Ochmański M.**, Bzówka J. and Modoni G. (2015): *Prediction of jet grouting columns diameter by Artificial Neural Networks*. Inżynieria Morska i Geotechnika. Vol. 35: 2015, No. 2, pp. 94-106. (in polish)

**Ochmański M.**, Bzówka J. and Modoni G. (2015): *Numerical analyses of tunnel built by using conventional method with jet grouting canopy*. In: *Reinforcement, sealing and anchoring of rock massif and building structures 2015*. The proceedings of the 20th international seminary, 12-13.2.2015 “Zpevnovani, tesneni a kotveni horninoveho masivu a stavebnich konstrukci 2015. Sbornik prispevku 20. mezinarodniho seminare. Vysoka Skola Banska - Technicka Universita Ostrava. Fakulta stavebni. Katedra geotechniky a podzemniho stavitelstvi fast, Minova Bohemia s.r.o. Ostrava. Ostrava: Katedra geotechniky a podzemniho stavitelstvi VSB-TU Ostrava”, pp. 120-125, ISBN 978-80-248-3672-0.

**Ochmański M.** (2014): *Three-dimensional numerical modelling of tunnels with jet grouting canopy*, Proceedings of the 23rd European Young Geotechnical Engineers Conference, Barcelona, Spain, 2-5 September 2014.

**Ochmański M.**, Modoni G., Bzówka J., Croce P. and Russo G. (2014): *Numerical modelling of tunnelling supported by jet grouting canopies*, Incontro annual ricercatori di geotecnica cheti 2014, Pescara, Italy, 14-16 July 2014.

**Ochmański M.** (2014): *Numerical analysis of tunnel with jet grouting canopy*, Proceedings of the XIV Scientific Conference for Civil Engineering PhD Students, Szczyrk, Poland, 8-9 May 2014.

**Ochmański M.**, Bzówka J. (2013): *Selected examples of the use of Artificial Neural Networks in geotechnics*; Białystok, Poland, 26-28 June 2013.

**Ochmański M.** (2013): *Sensitivity analysis of jet grouting columns parameters based on Artificial Neural Networks*; Proceedings of the XIII Scientific Conference for Civil Engineering PhD Students, Szczyrk, Poland,

Bzówka J., **Ochmański M.**, (2013): *The use of Artificial Neural Networks in a numerical model calibration*; Reinforcement, sealing and anchoring of rock massif and building structures 2013, Ostrava, Czech Republic, 14-15 February 2013.

**Ochmański M.**, Bzówka J. (2012): *Numerical model of SCL tunnels built in complex subsoil conditions*; ACEE, Vol. 5, No. 3, pp. 62-72.

**Ochmański M.**, Bzówka J. (2012): *Back analysis of SCL tunnels based on Artificial Neural Network*; ACEE, Vol. 5, No. 3, pp. 73-82.

**Ochmański M.**, Horváth T. (2012): *Application of back analysis for Sprayed Concrete Lined tunnels built in complex subsoil conditions*; 1<sup>st</sup> Eastern European Tunnelling Congress, Budapest, Hungary, 18-21 September 2012.