

Sophie Messerklinger  
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Center of Excellence Energy  
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## About me

Über 20 Jahre Erfahrung in der Planung von geotechnischen Bauwerken, insbesondere von Schüttdämmen. Sie ist gerichtl. zertifizierte und allg. beeidete Sachverständige für Bodenmechanik, Grundbau, Wasserkraftwerksbauten und Wasserschutzbauten sowie Materialentnahmen und Tiefbau.

Seit 2014 lehrt Frau Dr. Messerklinger an der FH Wels am Studiengang für Bauingenieurwesen für Hochbau und belegt seit 2019 die Professur für Geotechnik, Wasserbau und Bauverfahrenstechnik.

## Employment

### Research Center Wels

Wels, Austria  
1 Aug 2012 → present

### Center of Excellence Energy

1 Feb 2019 → present

### Mitglied der österreichischen Staubeckenkommission

Österreichische Staubeckenkommission  
Austria  
1 Jan 2020 → present

## Research outputs

### Large rock caverns for heat storage in district heating networks – A comparative study for the city of Salzburg

Messerklinger, S., 11 Oct 2023, p. 2746-2752. 6 p.

### Shafts and spiral tunnels for large heat storages – an economic study on ideal geometries

Messerklinger, S., Smaadahl, M. & Saurer, E., 2023, *Expanding Underground - Knowledge and Passion to Make a Positive Impact on the World- Proceedings of the ITA-AITES World Tunnel Congress, WTC 2023*. Anagnostou, G., Benardos, A. & Marinos, V. P. (eds.). CRC Press/Balkema, p. 144-151 8 p. (Expanding Underground - Knowledge and Passion to Make a Positive Impact on the World- Proceedings of the ITA-AITES World Tunnel Congress, WTC 2023).

### Applications of the ICOLD Bulletin on internal erosion in geotechnical engineering

Bridle, R. & Messerklinger, S., 2015, *Slopes and Geohazards*. Winter, M. G., Eldred, P. J. L., Eldred, P. J. L., Winter, M. G., Toll, D. G. & Smith, D. M. (eds.). p. 1971-1976 6 p. (Geotechnical Engineering for Infrastructure and Development - Proceedings of the XVI European Conference on Soil Mechanics and Geotechnical Engineering, ECSMGE 2015; vol. 4).

Visuelle Kontrollen an Schüttdämmen von Stauanlagen  
Messerklinger, S., 2015, In: *Wasser Energie Luft*. p. 259-263

### Formation mechanism of large subsidence sinkholes in the Lar valley in Iran

Messerklinger, S., 27 Aug 2014, In: *Quarterly Journal of Engineering Geology and Hydrogeology*. 47, 3, p. 237-250 14 p.

### Failure of a geomembrane lined embankment dam - Case study

Messerklinger, S., Jun 2014, In: *Geotextiles and Geomembranes*. 42, 3, p. 256-266 11 p.

Safety and sustainability of homogeneous earth dams

Messerklinger, S., Brenner, P. & Zegele, Z., 2013, *9th ICOLD European Club Symposium : Sharing Experience for Safe and Sustainable Water Storage*. 1 ed. Venedig: ITCOLD (Italian Committee on Large Dams), Vol. 1.

### **The Design of Filter Materials and their Importance in Geotechnical Engineering**

Messerklinger, S., 2013, *Int. Conf. on Soil Mechanics and Geotechnical Engineering (ICSMGE)*. p. 3313-3316 4 p.

Erosion and Drainage Well Blowout in the Foundation of the Plavinas Powerhouse: Case History.

Messerklinger, S., Dec 2012, In: *Geotechnical and Geological Engineering*. 30, 6, p. 1421-1433 13 p.

The Challenge of Dam Heightening

Messerklinger, S. & Brenner, P., 2012, *Int. Symp. on Dams for a Changing World*.

A new pressurized vane shear apparatus

Messerklinger, S., Zumsteg, R. & Puzrin, A., Mar 2011, In: *Geotechnical Testing Journal*. 34, 2, p. 112-121

### **Filter design for the heightening of a high earth core rockfill dam**

Messerklinger, S. & Straubhaar, R., 2011, *Dams and Reservoirs under Changing Challenges - Proceedings of the International Symposium on Dams and Reservoirs under Changing Challenges - 79 Annual Meeting of ICOLD, Swiss Committee on Dams*. p. 229-238 10 p. (Dams and Reservoirs under Changing Challenges - Proceedings of the International Symposium on Dams and Reservoirs under Changing Challenges - 79 Annual Meeting of ICOLD, Swiss Committee on Dams).

Heightening of the Göschenalp Earth-core Rockfill Dam

Messerklinger, S., Aemmer, M. & Straubhaar, R., 2011, In: *International Journal on Hydropower & Dams*. 18, 3, p. 43-48 6 p.

Large-Scale Cyclic Triaxial Tests for the Seismic Safety Assessment of a high Earth Core Rockfill Dam

Messerklinger, S., Straubhaar, R., Brenner, P., Springman, S. M., Laue, J. & Herzog, R., 2011, *15th Europ. Conf. on Soil Mechanics and Geotechnical Engineering (ECSMGE)*.

Long-term Seepage behaviour of an Embankment dam founded on Rock Strata under Artesian Pressure

Messerklinger, S., Brenner, P. & Zegele, Z., 2011, *Int. Symp. on Modern Technologies and Long-term behaviour of Dams (ISMTLTBD)*.

### **Safety and maintenance issues for a long embankment on a karstic foundation under artesian pressure**

Messerklinger, S., Brenner, P. & Zegele, Z., 2011, *Dam Maintenance and Rehabilitation II - Proceedings of the 2nd International Congress on Dam Maintenance and Rehabilitation*. p. 325-334 10 p. (Dam Maintenance and Rehabilitation II - Proceedings of the 2nd International Congress on Dam Maintenance and Rehabilitation).

Speicherbecken und ihre geotechnischen Herausforderungen

Messerklinger, S., 2011, *11. Geotechnik-Tag in München: Geotechnik und Energie*. p. 85-94

Seasonal Fluctuations of the Monitoring Data of a Large Powerhouse Founded on Glacial Till

Messerklinger, S., Zegele, Z. & Brenner, P., 2010, *8th ICOLD European Club Symposium*.

Sliding stability of a Tyrolean weir

Messerklinger, S. & Peter, M., 2010, *14th Danube-European Conf. on Geotechnical Engineering*.

### **Economic sampling and extraction of undisturbed, high quality samples in normally consolidated lacustrine clays using a large diameter tube**

Messerklinger, S. & Springman, S. M., 2009, In: *Geotechnical and Geological Engineering*. 27, 2, p. 207-215 9 p.

Non-Linear Elasto-Plastic Behaviour of Lacustrine Clay

Messerklinger, S. & Springman, S. M., 2009, In: *Geotechnical and Geological Engineering*. p. 93-104

Pressure and rate dependency of the shear strength of conditioned clays

Messerklinger, S., Zumsteg, R., Puzring, A., Egli, H. & Walliser, A., 2009, *4th Int. Young Geotechnical Engineer's Conf. (YGECE)*.

#### **Pressurized vane shear test for soil conditioning**

Zumsteg, R., Messerklinger, S., Puzrin, A. M., Egli, H. & Walliser, A., 2009, *Proceedings of the 17th International Conference on Soil Mechanics and Geotechnical Engineering: The Academia and Practice of Geotechnical Engineering*. p. 275-278 4 p. (Proceedings of the 17th International Conference on Soil Mechanics and Geotechnical Engineering: The Academia and Practice of Geotechnical Engineering; vol. 1).

The Long-Term Behaviour of a Run-Of-River Scheme in Latvia

Messerklinger, S., Zegele, Z., Dislere, S. & Brenner, P., 2009, *2nd Int. Conf. on the Long Term Behaviour of Dams*.

The in-situ stiffness of the sliding layer in a creeping landslide

Messerklinger, S., Puzrin, A. & Schmid, A., 2008, *Deformational Characteristics of Geomaterials - The Proceedings from the 4th International Symposium, Deformation Characteristics of Geomaterials*. IOS Press (15. September 2008)

#### **Local radial displacement measurements of soil specimens in a triaxial test apparatus using laser transducers**

Messerklinger, S. & Springman, S. M., 16 Jul 2007, In: *Geotechnical Testing Journal*. 30, 6, p. 454-465 12 p.

Local radial displacement measurements using laser transducers

Messerklinger, S., 2007, In: *Geotechnical Testing Journal*. p. 454-465

Deformation behaviour of soft Swiss lacustrine clays

Messerklinger, S., 2006, VDI Verlag.

Anisotropy and Non-linearity in lacustrine clay

Messerklinger, S., 2005, *3rd Int. Young Geotechnical Engineer's Conf. (YGECE)*.

Small strain Plasticity of lacustrine clay

Messerklinger, S., 2005, *2nd Int. Workshop for Young Doctors in Geomechanics (WHYDOC)*.

Displacement measurement with laser scanning in triaxial testing apparatus

Messerklinger, S., Springman, S. M., Bleiker, E. & Zweidler, A., 2004, *Proceedings of the 16th European Young Geotechnical Engineers Conference - EYGECE*. Wien: Published in 2004 in Wien by Österreichischer Ingenieur- und Architekten-Verein

#### **Modelling the anisotropy of soft Swiss lacustrine clay**

Messerklinger, S. & Springman, S. M., 2 Jun 2003, *Computational Fluid and Solid Mechanics 2003*. p. 447-450 4 p.

Mineralogical and mechanical behaviour of soft Finnish and Swiss clays

Messerklinger, S., Springman, S. M., Kahr, G., Plötze, M. & Trausch-Giudici, J., 2003, *International Workshop on Geotechnics of Soft Soils, Theory and Practice. : Proceedings; 17 - 19 September 2003, Noordwijkerhout, The Netherlands ; SCMEP ed. by Pieter A. Vermeer [and others] ; organized by the European Research Training Network "Soft Clay Modelling for Engineering Practice."*. Vermeer, P. A. (ed.). VGE, Verlag Glückauf

Modelling soft lacustrine clay

Messerklinger, S. & Springman, S. M., 2003, *2nd M.I.T. Conference on Computational Fluid and Solid Mechanics*.

Swiss lacustrine clay: Mineralogical and Mechanical Characteristics

Messerklinger, S., Springman, S. M., Plötze, M. & Trausch-Giudici, J., 2003, *Int. Workshop on Geotechnics of Soft Soils: Theory and Practice*.

### **An advanced multilaminate model for clay**

Witafsky, C., Messerklinger, S. & Schweiger, H. F., 2002, *Numerical Models in Geomechanics - 8th Proceedings of the International Symposium on Numerical Models in Geomechanics, NUMOG 2002*. Pande, G. N. & Pietruszczak, S. (eds.). CRC Press/Balkema, p. 67-74 8 p. (Numerical Models in Geomechanics - 8th Proceedings of the International Symposium on Numerical Models in Geomechanics, NUMOG 2002).

## **Activities**

### **Kavernen als Grosswärmespeicher in Fernwärmenetzen**

Messerklinger, S. (Speaker)  
25 Nov 2022

### **Verladebahnhof Vorchdorf**

Messerklinger, S. (Consultant)  
1 Sept 2022 → 28 Feb 2023

### **Floods - design and construction of measures**

Messerklinger, S. (Speaker)  
26 Nov 2019

### **Österreichisches Nationalkomitee für Talsperren (External organisation)**

Messerklinger, S. (Member)  
2018

### **Erosion in dam materials**

Messerklinger, S. (Speaker)  
26 Apr 2017

### **Soil Mechanics and Foundation Engineering in Civil Engineering - or - No structural Engineering without Foundation Engineering**

Messerklinger, S. (Speaker)  
28 May 2015

### **The Geological Society, London (Publisher)**

Messerklinger, S. (Reviewer)  
2015 → 2019

### **Simulationen mit neu entwickelten Stoffgesetzen**

Messerklinger, S. (Speaker)  
8 Mar 2006

### **Anisotropes und Nichtlineares Verformungsverhalten von Schweizer Seebodenlehm**

Messerklinger, S. (Speaker)  
10 Jun 2005

### **Eigenschaften von Schweizer Seebodenlehm**

Messerklinger, S. (Speaker)  
15 Mar 2005

### **Displacement Measurement with Laser Scanning in Triaxial Testing Apparatus**

Messerklinger, S. (Speaker)  
8 Jul 2004

**Mineralogical and Mechanical Behaviour of Soft Finnish and Swiss Clay**

Messerklinger, S. (Speaker)

18 Sept 2003

**Modelling Soft Lacustrine Clay**

Messerklinger, S. (Speaker)

18 Jun 2003

**Modelling Swiss Lacustrine Clay**

Messerklinger, S. (Speaker)

27 Aug 2002

**Advanced Constitutive Modelling**

Messerklinger, S. (Speaker)

4 Mar 2002

**Comparison of S-CLAY1 and Multilaminate Model.**

Messerklinger, S. (Speaker)

17 Sept 2001

**Prizes****The Young Researcher Fellowship Award for Exemplary Research in Computational Mechanics**

Messerklinger, S. (Recipient), 2003