

# ORGANIZATION

## Symposium Host

TU Wien, Institute of Geotechnics  
KTH Stockholm, Division Soil and Rock Mechanics

## Organizing Committee

Prof. Dietmar Adam | TU Wien  
Prof. Stefan Larsson | KTH Stockholm  
Prof. Rainer Massarsch | Geo Risk & Vibration Scandinavia AB  
Dr. Johannes Pistor | TU Wien  
Dr. Carl Wersäll | KTH Stockholm

## Venue

The symposium will be held in the historic House of Engineers – Eschenbachgasse 9/11, A-1040 Vienna, Austria – under the auspices of the current president of the Austrian Society of Engineers and Architects, Prof. Heinz Brandl.

## Gala Dinner

On the occasion of the 40<sup>th</sup> anniversary of CCC a gala dinner will take place at the venue right after the symposium.

## Publication

Extended Abstracts of all presentations will be available at the symposium. The Institution of Civil Engineers (ICE) will publish a Themed Issue where more detailed papers covering the symposium topics will be published.

## Symposium Fees

€ 125,- registration until September 30<sup>th</sup>, 2018 (gala dinner included)  
€ 150,- registration from October 1<sup>st</sup>, 2018 (gala dinner included)  
€ 25,- students (gala dinner not included)

Fees include the symposium materials (Proceedings), admission to all scientific sessions and the technical exhibition as well as all coffee breaks and light lunch buffet during the symposium and the gala dinner in the evening.

## Registration

Please download the registration form from: [www.igb.tuwien.ac.at/en/ccc/](http://www.igb.tuwien.ac.at/en/ccc/) and submit it to: [ccc@tuwien.ac.at](mailto:ccc@tuwien.ac.at)

## Accommodation

About accommodation in Vienna and other travel information please refer to: [www.igb.tuwien.ac.at/en/ccc/](http://www.igb.tuwien.ac.at/en/ccc/)

## Contact

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TU Wien, Institute of Geotechnics  
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A-1040 Vienna, Austria

# SYMPOSIUM & EXHIBITION

In 1978 the first CCC system was patented. Since then 40 years have passed, in which not only CCC has been established in geotechnical engineering worldwide, but has also significantly influenced the development of the rollers to high tech devices. We will review the past four decades together with renowned international experts and take a look into the future. The anniversary symposium offers a platform for geotechnical engineers from all over the world to exchange experience and developments in dynamic roller compaction and compaction control.

The symposium is connected with a fine exhibition at the venue. The leading roller manufacturers **Bomag**, **Dynapac**, **Hamm** and **Ammann** as well as the developers of compaction control devices **Anix** and **ZORN INSTRUMENTS** will present their products and prepare short techno-commercial presentations.

## Host



## Patronage



## Non-financial Co-Sponsors



# 40 Years of Roller Integrated Continuous Compaction Control (CCC)

## Anniversary Symposium & Exhibition

## 40 Jahre

## Flächendeckende Dynamische Verdichtungskontrolle (FDVK)

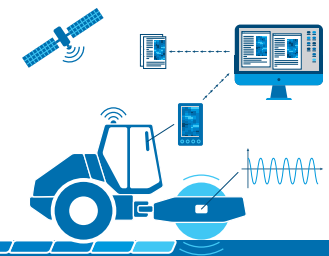
## Jubiläumssymposium & Ausstellung

November 29<sup>th</sup>, 2018  
Vienna, Austria

## Chairmen:

Prof. D. Adam | TU Wien  
Prof. S. Larsson | KTH Stockholm

House of Engineers  
Eschenbachgasse 9/11  
A-1010 Vienna  
Austria



## Exhibitors and Sponsors of the Anniversary Symposium



# PROGRAM

## 07:15 Registration & Welcome Coffee

## 08:15 Opening Ceremony & Welcome Address

Chair: D. Adam

H. Brandl, President of ÖIAV

M. Manassero, Vice-President for Europe of ISSMGE

H.F. Schweiger, President of ASSMGE

## 08:30 “Pioneers’ Session” – Historic Review from Scandinavia and Central Europe

Chair: S. Larsson

*The first steps in CCC*

Å. Sandström | Geodynamik AB, Stockholm, Sweden

*Development and improvement of a roller mounted compaction meter in Sweden in the 70's and 80's*

F. Åkesson | Dynapac Compaction Equipment AB, Karlskrona, Sweden

*CCC milestones in Central Europe*

D. Adam | TU Wien, Vienna, Austria

## 09:00 Invited Lectures (I)

Chair: R. Massarsch

*Schwingungstechnische Grundlagen der FDVK I  
Vibration basics of CCC*

W. Kröber | Hochschule Koblenz, Germany

*Automatic compaction control: an application of the theory of nonlinear vibrations*

R. Anderegg | Fachhochschule Nordwestschweiz FHNW, Switzerland

*Estimating stiffness in layered and spatially heterogeneous ground*

M. Mooney | Colorado School of Mines, USA

## 10:00 Coffee Break & Exhibition

## 10:30 Invited Lectures (II)

Chair: C. Wersäll

*Derivation of the permissible spatial variation of CCC data from the requirements for driving comfort*

J. Grabe, A. Hagemann | TU Hamburg, Germany

*How the use of CCC can change (influence) our understanding of soil behaviour during compaction*

A. Petkovšek, M. Maček | University of Ljubljana, Slovenia

*Extended 2nd Proctor Lecture: Compaction improvements from an industry 4.0 perspective*

A. Correia | University of Minho, Guimarães, Portugal

## 11:30 Company Techno-commercial Presentations

Bomag GmbH

Dynapac Compaction Equipment AB

Hamm AG

Ammann Group Holding AG

Anix GmbH

ZORN INSTRUMENTS GmbH & Co. KG

## 12:30 Light Lunch Buffet & Exhibition

## 13:30 Session (I) – Application I Interpretation I Classification I Evaluation I Implementation of CCC

Chair: J. Pistol

*Continuous Compaction Control – CCC applications and interpretation of measurements*

H.J. Kloubert | BOMAG GmbH, Boppard, Germany

*Intelligent Compaction Measurement Values – a systematic classification*

G.K. Chang | Transtec Group and IICTG, Austin, USA

G. Xu | Southwest Jiaotong University and IICTG, Sichuan, China

*Evaluation of weak spots in geotechnics in terms of size, distribution and relevance*

B. Hansmann, G. Bräu | Technical University of Munich, Germany

*Institutional challenges and opportunities in implementation of Continuous Compaction Control*

S. Nazarian | The University of Texas at El Paso, USA

M. Mazari | California State University, Los Angeles, USA

C. Tirado | The University of Texas at El Paso, USA

J. Si | Texas Department of Transportation, Austin, USA

*Discussion*

*Intelligent Compaction implementation in US – Issues and solutions*

G.K. Chang | Transtec Group and IICTG, Austin, USA

M. Arasteh | US Federal Highway Administration and IICTG, Baltimore, USA

*Progress towards implementation of CCC in the UK*

M.G. Winter | TRL Limited, Edinburgh, United Kingdom

*Construction of the Istanbul new third airport by application of the CCC method in earthworks QA/QC*

C. Hotz | Arcadis Germany GmbH, Darmstadt, Germany

H.J. Kloubert | BOMAG GmbH, Boppard, Germany

*Influence of vibratory compaction on slope stability ongoing research in Norway*

J. Johansson | Norwegian Geotechnical Institute, Oslo, Norway

J.-S. L'Heureux | Norwegian Geotechnical Institute, Trondheim, Norway

*Discussion*

## 15:30 Coffee Break & Exhibition



## 16:00 Session (II) – Research & Development I

### Novel Compaction Techniques

Chair: J. Grabe

*Roller compaction of rock-fill with automatic frequency control*

C. Wersäll | KTH Stockholm, Sweden

I. Nordfelt | Dynapac Compaction Equipment AB, Karlskrona, Sweden

S. Larsson | KTH Stockholm, Sweden

*Innovative measurements of the roller-soil-interaction system during dynamic compaction*

F. Kopf | FCP - Fritsch Chiari & Partner ZT GmbH, Vienna, Austria

M. Fritz | VCE – Vienna Consulting Engineers ZT GmbH, Austria

J. Pistol, D. Adam | TU Wien, Vienna, Austria

*Measuring soil compaction on dynamic compaction technologies – Field tests and laboratory investigations using the PIV method*

A. Knut, R.E. Ocaña Atencio, H. Pankrath, R. Thiele | Leipzig

University of Applied Sciences, Leipzig, Germany

M. Beitel Schmidt | Technische Universität Dresden, Germany

*Numerical simulation of soil compaction with dynamically excited rollers*

P. Erdmann | IE, Ingenieurbüro für Berechnung, Entwicklung und

Konstruktion, Emmelshausen, Germany

*Discussion*

*CCC with oscillating rollers – fundamentals and application in experimental field tests*

J. Pistol, D. Adam | TU Wien, Vienna, Austria

F. Kopf | FCP - Fritsch, Chiari & Partner ZT GmbH, Vienna, Austria

*Analytical modelling of the motion of an oscillating roller during soil compaction assuming pure rolling contact*

I. Paulmichl, C. Adam | UIBK, Innsbruck, Austria

D. Adam | TU Wien, Vienna, Austria

W. Völkel | HAMM AG, Tirschenreuth, Germany

*Vibratory plate resonance compaction*

K.R. Massarsch | Geo Risk & Vibration Scandinavia AB, Stockholm, Sweden

C. Wersäll | KTH Stockholm, Sweden

*Spatial Compaction Control: soil type detection by means of artificial intelligence for boom mounted compactors*

U. Nohlen, R. Popelka | Maschinentechnik Schrode AG, Hayingen, Germany

Y. Berquin | Eberhard Karls Universität Tübingen, Germany

*Discussion*

## 18:00 Reports (IICTG and ISSMGE TC 202) and ICE Publishing

## 18:15 Get-Together in the Exhibition Hall

## 19:30 Gala Dinner on the Occasion of 40 Years of CCC