

2. International VDI Conference 2018

# Smart Construction Equipment

December 4-5, 2018, Amsterdam, The Netherlands

- The Future of Digital Construction
- What is new: Telematics, Communication & Data Management
- On-Site Safety of Smart Construction Sites
- Off-Site Construction & 3D Printing
- Automation of the Construction Site
- Visualisation & Drones in Construction

+ **Interactive Sessions**

+ **Workshops**

+ **Parallel Conference: Tunnel Construction**

Meet international Experts from:





About us

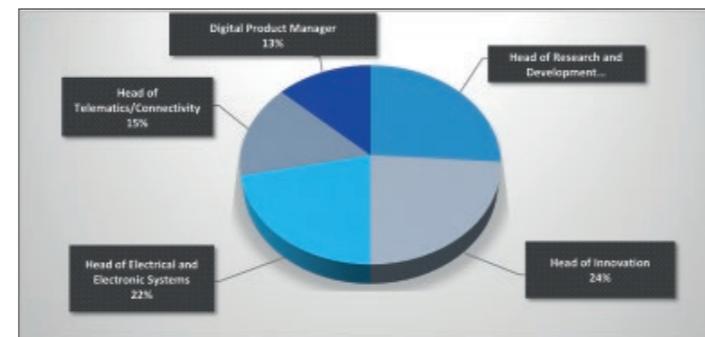
VDI

The Association of German Engineers (VDI) is one of the largest technical-scientific associations in Europe. Throughout the years, the VDI has successfully expanded its activities nationally and internationally to foster and impart knowledge about technology-related issues. As a financially independent, politically unaffiliated and non-profit organization the VDI is recognized as the key representative of engineers both within the profession and in public.

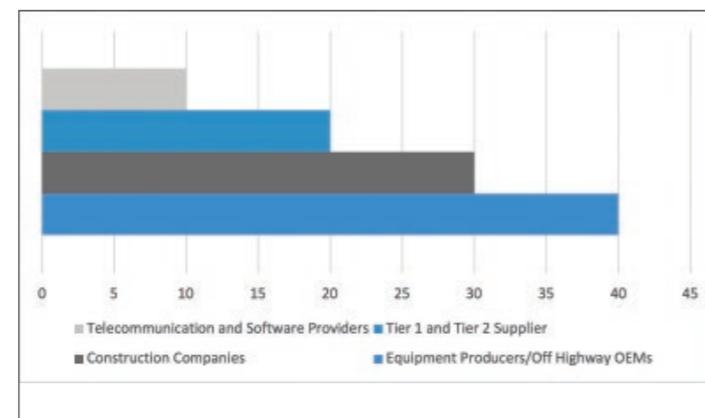
Reasons to attend

- Meet international experts from the construction industry
- Discuss the impact of automation and digitalization on your industry
- Learn about chances and challenges with Data Management & Machine Learning
- Network with peers from machine manufacturers, suppliers and construction companies
- Benefit from the parallel conference on Tunnel Construction
- Prepare for the digital transformation

Expected Participants according to Functions



Expected Participants according to Industries



08:30 Registration & welcome coffee

10:00 Chair's welcome & opening address

Conference chair: Dr.-Ing. Oliver Geibig, Senior Trade Manager Engineering, Hilti Deutschland AG, Germany

I. Construction Site of the Future

10:15 Building Information Modelling - Data Collection, Analysis and Management from Tender to Handover

- The need of digital data collection & expectations
- Approach to a digital construction integration platform
- BIM to field – An example of the implementation

Dipl.-Ing. René Schumann, Managing Director, HOCHTIEF Vicon GmbH, Germany

10:45 The Future of Digital Construction

- The digital story of the Museum of the Future, Dubai
- Pushing the boundaries of construction technology
- Implementing practical and smart solutions
- Successful utilisation of the imbedded data in models
- Supply chain data management for the whole lifecycle

Craig Garrett, Project Technology Leader, BuroHapphold Engineering, Dubai & Paul Brennan, VDC Manager, BAM, Ireland

11:15 Digital Construction & Machines - Presentation of a CECE study

- The EU policy to support digital transformation of industry
- Co-operation across the construction value chain extends to EU policy
- CECE's Digitalisation Project

Riccardo Viaggi, CECE Secretary General, CECE - Committee for European Construction Equipment, Belgium

II. Connected Construction Equipment & Big Data

11:45 The Democratisation of Machine Learning & Artificial Intelligence

- Why should we care about ML/AI? How will it change our daily life & where are the limits?
- What can we expect from ML/AI and which use cases are already deployed?
- See ML in action and learn how to easily adopt this in your company!

Dr. Stefan Ebener, Manager CE Specialists, Machine Learning, Google, Germany

12:15 Lunch

13:45 IoT in Compact & Light Construction Equipment

- Multi stage telematics system & edge computing
- Diagnostic analysis as enabler for new services
- Standardized interfaces via IoT platforms to the customer

Daniel Bone, Manager Diagnostic Services; co-author: Franz Rimböck, Head of Corporate Digitalization, both Wacker Neuson SE, Germany

14:15 IoT Architecture for Lifting Solutions

- Market view on relevant technologies for fleet management systems
- Connectivity in a heterogeneous product portfolio with safety regulations
- Adding customer value via data analytics for cyber-physical systems
- New business models for the lifting industry

Dr. Christoph Gugg, Sr. IoT Solutions Architect, Palfinger AG, Austria

14:45 World Cafés

- Communicating smart devices at the construction site – vision or reality?
- Seamless digital construction site throughout all project phases
- Autonomous Mobile Machines
- Deep Learning and Construction Machines

World Cafés

16:15 Networking & coffee break

III. Optimizing the Construction Process

16:45 Large-scale 3D Printing for Construction: Current & Future Technology and Applications

- Key challenges the construction industry must face
- Benefits of large-scale 3D printing vs. traditional construction methods
- Use cases and available technology: Performance and Limits
- Market and technical scenarios

Jean-Daniel Kuhn, Managing Director, XtreeE & Maxime Trocme, Research & Development Director, Vinci Construction, France

17:15 Optimizing Interfaces at Smart Construction Sites - From BIM to Field

- Prerequisite for running smart construction sites from a supplier perspective
- New opportunities for smart devices for the construction industry
- Challenges of change management

Speaker to be confirmed, Hilti AG, Liechtenstein

17:45 Implementing real-time Process Control in Asphalt Construction - Practical Lessons from the Netherlands

- Development and implementation
- Optimization of asphalt construction
- Asphalt process control and the appropriate indicators
- Control and visualisation using an operator-censored approach
- Lessons learned for contractors, public clients and R&D

Dr. Seirgei Miller, Researcher in the ASPARi Unit; co-author: Denis Makarov, Researcher, both: University of Twente & Berwich Sluer, Head of R&D, Bokalis, The Netherlands

18:15 Summary of the first conference day

Get Together

At the end of the first conference day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers.

#### IV. Visualisation in Construction

##### 09:00 The Hidden Value of drone-based Mapping

- Drones for surveying and mapping sites
- Increasing construction efficiency with UAV
- Mapping with drones - The near future
- Pointclouds from UAV - The new way for surveying
- Lidar-UAV and the future with Artificial Intelligence

**Dr. Thomas Gröninger**, Head of Digital Object Survey and UAV, STRABAG, Germany

##### 09:30 Smart Classification of Geospatial Data by Deep Learning – Basics and Challenges

- Monitoring of large-scale infrastructure elements
- Data interpretation by deep learning
- 3D-Data object representation

**Prof. Dr. Alexander Reiterer**, Head of Department, Fraunhofer Institute IPM, Germany

##### 10:00 Digital Service Communication & Augmented Reality for the Industrial Service

- Challenges in the communication of a field service department
- Specific needs for the construction machinery sector
- Why advanced technology is not enough
- The solution for Zeppelin, shaped over multiple iterations

**Christoph Biberacher**, M.Eng., Product and Service Engineer, Zeppelin Baumaschinen GmbH & **Martin Riedel**, CEO, rise technologies GmbH, Germany

10:30 ☕ Networking & coffee break

#### V. Automation in Construction

##### 11:00 The Future of Construction Equipment – The next Wave of Automation

- Important enablers of the Technological Revolution
- Past automation - the long term roadmap to independent entities
- From add-on electronic support in regular machines to new concepts of solving construction work

**Torbjörn Martinsson**, M.Eng, Research Engineer, Volvo Construction Equipment, Sweden

##### 11:30 Autonomous Construction Site – Line of Sight & Non Line of Sight

- Remote operation of machines
- Improving safety on the Autonomous Construction Site
- Optimizing construction and enhancing productivity

**Jason Ramshaw**, Digital & Technology, Caterpillar Inc., UK

##### 12:00 Mine Automation - Improving Productivity and Safety

- Autonomous trucks on the mining site
- 5G Networks, the future for mining ?
- The importance of positioning services for mine safety

**Peter Burman**, Program Manager Mine Automation, Boliden AB, Sweden

12:30 🍽️ Lunch

##### 13:30 Panel Discussion:

##### The Consequences of Automation for Safety on the Construction Site - Blessing or Curse?

Panelists: **Prof. Dr. Karsten Berns**, Robotic Research Lab, Technical University Kaiserslautern and further experts

Panel Discussion

#### VI. Safety on Smart Job Sites

##### 14:15 Research Project DigiRab – Safety Work on the Digitized Construction Site

- Smart technologies for safety work on the construction site
- Digitization of occupational safety
- New possibilities for implementing state health and safety regulations

**Wolfgang Bücken**, Business Development & Key Account Manager DACH; co-author: Raimo Vollstädt, Support Engineer & OEM Business, both: Topcon Deutschland Positioning GmbH, Germany

##### 14:45 Safety in Construction - the Connected Jobsite

- Concept and presentation
- Co-operation with the current eco-system
- Customer examples and return of experiences
- Next steps and the future of construction safety

**Jean-Philippe Panaget**, CEO, CAD.42 & Co-speaker (tba), France

##### 15:15 Conference chair's closing remarks

15:30 End of conference

#### International VDI Workshop

## Integrated Road Tunnel Safety Management

**Workshop Chair:** Han Admiraal, Managing Director, Construction & Development, Enprodes Management Consultancy BV, The Netherlands

##### Date and Venue:

December 03, 2018

Radisson Blu Hotel Amsterdam Airport

Time: 10:00 - 16:00

#### CONTENT

This workshop will look at and explore the need for an integrated approach to road tunnel safety based on the EU Directive. Road tunnel safety goes further than installing the right equipment in a tunnel. It requires an integrated approach in that it needs to be part of the organizational culture. It also requires working together with third parties, namely the emergency and rescue services. In order to do so there must be knowledge and appreciation about how these services operate. In the workshop all aspects of an integrated approach will be discussed. This starts with the basic concept and how to demonstrate the road tunnel safety case throughout the tunnel's lifetime. Standards and guidelines will be discussed, and we will ask how to approach non-generic cases. Ensuring that procedures and operating system work together will be discussed, as will the testing during commissioning of the tunnel. Emergency management and response and how to prepare for this is an essential part of the integrated approach. We will look at what this means and practice with the scenario analysis as a common ground approach. The workshop is of interest to anyone who has to deal with road tunnel safety in an official capacity. Whether working for a tunnel operating authority, administrative authority or the emergency and rescue services.

#### Agenda

- Organising for Road Tunnel Safety
- Standards and Guidelines
- Operational Control and Testing
- Emergency Response in Road Tunnels
- Hands-on: Scenario analysis
- Summary: Keep your tunnel safe

#### International VDI Workshop

## The Autonomous Construction Site of the Future

**Workshop Chair:** Prof. Dr. Karsten Berns, Computer Science Department, TU Kaiserslautern, Germany

##### Date and Venue:

December 06, 2018

Radisson Blu Hotel Amsterdam Airport

Time: 10:00 - 16:00

#### CONTENT

This workshop provides an overview on smart construction equipment and the autonomous construction site of the future. It will be shown, what prototype systems exist and due to real applications, what their drawbacks are. Based on best practice examples from areas like autonomous construction machines, inspection systems for construction and autonomous production a better understanding of the state of research and development will be given. The main part of the workshop consists of breakout sessions in which important topics like perception and scene understanding, safety of smart construction machines as well as control and interaction concepts will be elaborated. Participants should actively contribute during the breakouts. Based on case studies of their development projects, different problem areas should be discussed in detail. All breakouts are started by a short presentation followed by an intensive discussion of the participants. The workshop will end with a summary of the main findings and outlook into the future.

#### Introduction

- Overview of smart construction equipment
- Autonomous construction machines
- Inspection systems for construction
- Autonomous production

#### Breakout Sessions – Planned topics include:

- Perception and scene understanding
- Safety of smart construction machines
- Control and interaction

#### Discussion and conclusion

- Main findings of the workshop day
- Outlook into the future

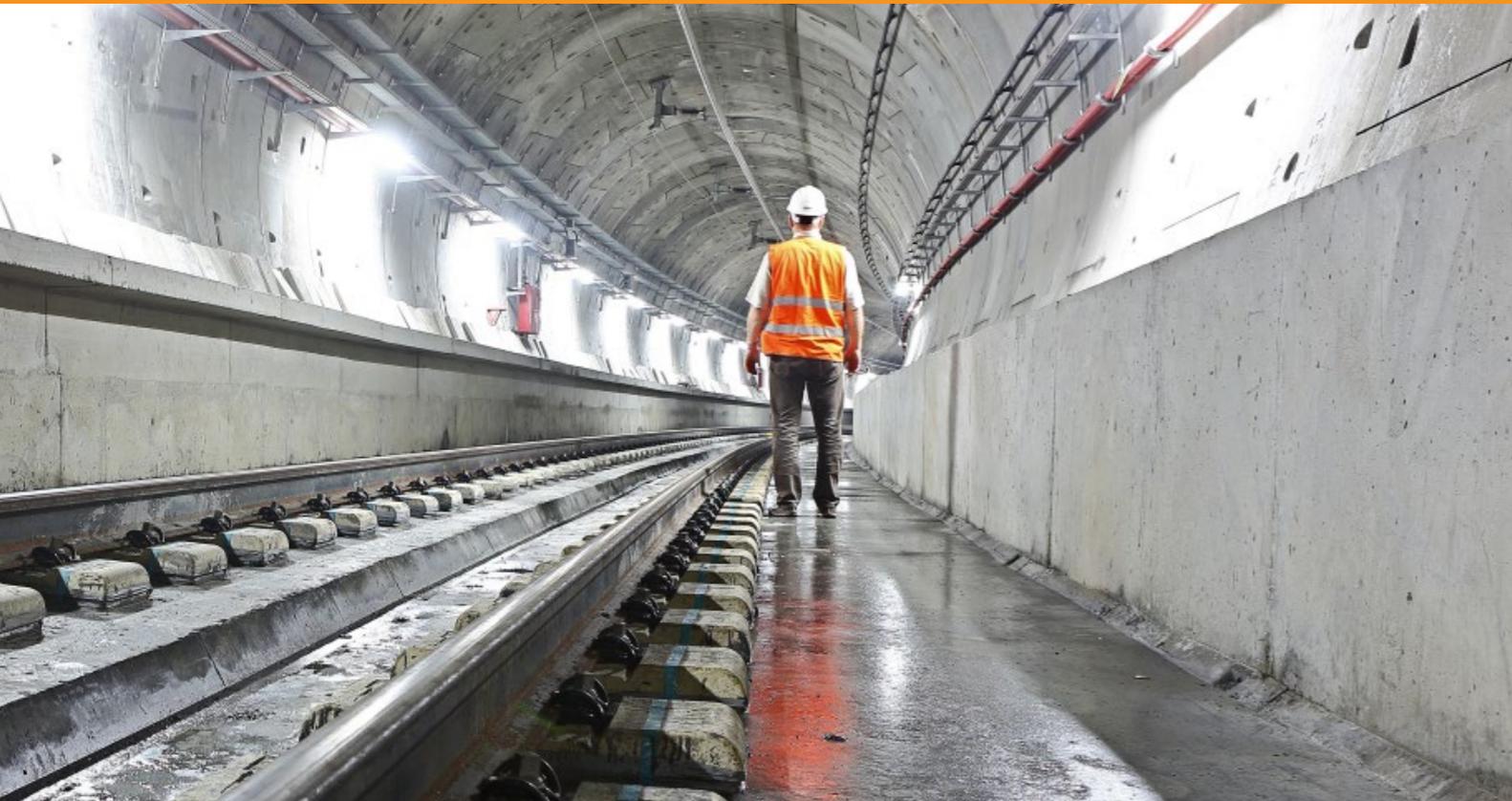
# Tunnel Construction

December 4-5, 2018  
Amsterdam, The Netherlands

The VDI Tunnel Construction conference will bring together international experts and key players from the industry to discuss important issues such as building information modeling, excavation and construction methods, challenging inner-city projects, maintenance and retrofitting as well as digitalization and innovative new technologies. Listen to our speakers from companies such as Herrenknecht, Laing O'Rourke, PORR Bau GmbH, Bouygues Construction, Bane NOR, ADSSC, Ferrovia-Agroman, Implemia, WSP Sverige, Amberg Engineering, Babendererde, Bekaert Maccaferri Underground Solution, GEODATA and many more! Find out about the challenges and opportunities for tunnel construction and how new and creative ideas will keep you ahead in the marketplace.

**Renowned speakers will present their results on the following topics:**

- Building Information Modeling - Planning International Tunnel Projects
- Tunnel Construction under Challenging Conditions - Inncity Projects
- New Technologies and Innovations on the Tunnel Construction Site
- New & Rare Excavation Techniques
- Tunnel Maintenance & Safety
- + Interactive Sessions
- + Workshops



**Exhibition / Sponsoring**

If you want to meet with and reach out to the first-rate experts attending this VDI conference and to powerfully present your products and services to the well-informed community of conference participants, please contact:

**Lukas Floherschütz**  
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**Become a speaker**

Become a speaker at our international VDI Construction & Off-Highway Conferences. Make yourself known in the industry and discuss best practice examples with other international experts. We are looking for speakers on: BIM, Connected Off-Highway Machines as well as Bridge Construction. Please submit your topic to:  
 Maria Baumeister  
 Product Manager International Business  
 Phone: +49 211 6214 - 284  
 Email: Baumeister@vdi.de

**Terms and Conditions**

**Registrations:** Registrations for conference attendance must be made in writing. Confirmation of your registration and the associated invoice will be mailed to you. Please do not pay your conference attendance fee until you have received our invoice and its invoice number to be stated for transfer. Dutch VAT directives apply. Please state your VAT-ID with your registration.

**Conference venue**  
 Radisson Blu Hotel Amsterdam Airport  
 Boeing Avenue 2  
 1119PB Schiphol-Rijk, The Netherlands  
 Phone: +31 20 655 3131  
 Email: Reservations.Amsterdam.Airport@Radissonblu.com



**Hotel room reservation:** A limited number of rooms has been reserved for the benefit of the conference participants at the Radisson Blu Hotel Amsterdam Airport. Please refer to "VDI Conference". For more hotels: [www.vdi-wissensforum.de/hrs](http://www.vdi-wissensforum.de/hrs)

**VDI Wissensforum service package:** The conference package includes the conference documents (online), beverages during breaks, lunch and the get-together on December 4, 2018.

**Conference attendance conditions and terms:** By way of your registration you accept the conference attendance conditions and terms of VDI Wissensforum GmbH as binding. Any cancellation of your registration must be made in writing. We will charge you only an administrative fee of € 50.00 plus Dutch VAT if you cancel your registration earlier than 14 days ahead of the conference date. Any cancellation that reaches us after this deadline will entail the conference attendance fee as stated in our invoice to be charged in full. The date of the post office stamp of your written cancellation will be the decisive criterion. In that case, we will gladly mail you the conference documents on request. Subject to agreement, you may name a substitute participant. Individual parts and sections of conferences and seminars cannot be booked. You will be informed without delay if an event has to be cancelled for unforeseeable reasons. In that instance, you will be entitled only to a refund of your conference attendance fee if already paid. We reserve the right to exchange speakers and/or change the program sequence in exceptional cases. In any case, the liability of VDI Wissensforum GmbH is restricted exclusively to the conference attendance fee.

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## Registration

# Smart Construction Equipment



## Register online!

[www.vdi-international.com/01K0916018](http://www.vdi-international.com/01K0916018)



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8888

Participants  
are eligible to  
attend the parallel  
conferences free of  
extra charge

Yes, I will participate as follows:

### Participation Fee + VAT

VDI Conference 04.-05.12.2018  
(01K0916018) € 1690

and/or

Workshop 03.12.2018  
(075T901001) € 950

and/or

Workshop 06.12.2018  
(015T928001) € 950

and/or

Package Price (Please tick the boxes)

(Conference + 1 Workshop) € 2370

I am interested in sponsoring and/or exhibition

Participation Fee VDI-Members\* Save 50 € for each Conference Day.

\* For the price category 2, please state your VDI membership number

VDI membership no. Title

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Please state your invoice address if this differs from the address given

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