

VDI

International VDI Conference

# Bridges

Challenges of Planning, Design and Construction

June 25 - 26, 2019, Rotterdam, The Netherlands

- The Future of Planning Bridges
- Lessons Learned from challenging international Bridge Projects
- Self-Monitoring Bridges, Drones and other new Technologies
- 3D Print – What does the Future of Pre-Construction look like?
- The Value of Bridge Building Materials
- The Importance of good and sustainable Maintenance

+ **Workshop on Bridge Assessment and Rehabilitation**

+ **World Cafés**

+ **Panel Discussion**

Meet international Experts from:



COWI

FHECOR



HAASNOOT BRUGGEN

Helsinki

HOLLANDIA INFRA

INTEGRA

Knight Architects



Royal HaskoningDHV

sbp



SZG

TU

TÉCNICO LISBOA

VÄYLÄ

XtreeE

An event organized by VDI Wissensforum GmbH  
[www.vdi-international.com/07K0903019](http://www.vdi-international.com/07K0903019)



08:30 Registration & welcome coffee

10:00 Chair's welcome and opening address

**I. The Future of Planning Bridges**

**10:15 The valuable Role of the strong Concept in Bridge Design**

- What is conceptual design?
- The value of story telling
- How to define, protect and enhance design quality

**Martin Knight**, Director, Knight Architects, England

Opening Keynote

**10:45 Working on Circular Bridges**

- Working on sustainable solutions for our infrastructure - circular developments in bridges
  - Integrating circularity in the design of bridges
  - Possibilities for durable materials
  - Re-use of 'old' bridges
  - Examples: Re-use of Archbridge Lekbrug and the first circular viaduct
- Barbara van Offenbeek-Kuipers**, Senior Consultant Circular Infrastructure, Rijks-waterstaat – Ministry of Infrastructure and Environment, The Netherlands

**II. Facing international Challenges in Bridge Construction**

**11:15 Crown Bridges – Tram Connection to Laajasalo**

- Project presentation
  - Bridge and light railway project
  - Design and project management issues
- Ville Alajoki**, Team leader, City of Helsinki, Finland

**11:45 Making of the Signature Bridge at Delhi – Challenges and Lessons Learned**

- Challenges during the conceptualisation phase
  - Lessons learned from engineering the Signature Bridge
  - Facing logistical and administrative challenges
  - Getting ready: Our learnings from the commissioning phase
- Venkataramana Heggade**, Technical Director, Gammon Engineers & Contractors Pvt Ltd., India

12:15  Lunch

**13:45 Challenges in Bridge Construction: Today's Engineer between Technology, Demand and Reality**

- Draft and deliverables
  - Technical solution in domain of normative and regulatory complexity
  - Future developments
- Rüdiger Schidzig**, Director, SZG – engineering & managing, Germany

**14:15 The Coastal Highway Route E39 Project – How to cross the deep and wide Fjords of Norway**

- Why we are building a „ferry free“ E39, and the challenges it encompasses
  - Overview of options for crossing the fjords, including in depth description of two concepts
  - The Submerged Floating Tube Bridge – The „hidden“ bridge
  - The Bjørnafjord Crossing – A look at the design of a modern floating bridge
- Mathias Egeland Eidem**, Project Manager, Fjord Crossing Project, co-author; Arianna Minoretti, Bridge Section, both: Statens vegvesen - Norwegian Public Roads Administration, Norway

**14:45 The Brighton i360 Observation Tower and its Implications for Bridge Engineering**

- Genesis of the project
  - From contract phase to completion – the challenges throughout the different phases
  - Why the project was successful and what we can learn for bridge engineering
- Nardo Hoogendijk**, Managing Director, Hollandia, The Netherlands

Out of the Box

15:15  Networking and coffee break

**15:45 Interactive World Café Session**

During the interactive World Café Session, we invite you to directly engage with other experts. It is an interactively moderated discussion on different topics. Discuss and identify challenges within your sector as well as problems, needs and solutions. The focus is on the participants – Decide what exactly you would like to discuss and introduce your own experiences and cases.

17:15  End of Conference Day One & Time for Refreshments

**Creating Connections – Challenges of building Footbridges in rural Areas**

**Holly Bartelt**, Senior Program and Accounts Manager, Bridges to Prosperity, USA

Evening Keynote

 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.

### III. The Importance of Maintaining our Bridges

#### 09:00 Learning from the Polcevera Viaduct – the Importance of Bridge Assessment and Rehabilitation

- The structural behaviour of the Polcevera Viaduct
- The capacity of the props, stays, deck and diaphragms
- The importance of assessment: A systemic failure
- Stay versus suspension: An ever ending story

**Marco Petrangeli**, CEO, co-author; Dr. Filippo Del Drago, Structural Engineer, both; INTEGRA, Italy

Keynote

#### 09:30 Digital Transformation of Structural Health Monitoring

- Structural health monitoring
- Stream processing of data and non destructive testing
- Innovative methods and self-monitoring bridges

**Dr.-Ing. Ralf Herrmann**, Scientist, co-authors; Dr. Stefan Maack, Scientist, Dr. Matthias Baeßler & Dr. Ernst Niederleithinger, Head of Division, BAM, Germany

#### 10:00 Knowing your Bridges – How to get a good Picture of the Bearing Capacity of your Bridges

- Managing all bridge data and make the best out of it
- Static analysis of bridges
- Fatigue calculations of bigger transports and simulated trafficflow

**Heini Raunio**, Bridge Specialist, Vayla – Finnish Transport Infrastructure Agency, Finland

10:30  Networking and coffee break

### IV. Innovations and New Technologies

#### 11:00 Inspection of Existing Structures by Drones – Recent Trends and Future Perspectives

- How to collect and process high quality images
- Principle differences between traditional inspection and inspection based on using drones – benefits and challenges
- How to generate 3D models (digital twins) of structures based on digital images
- Principles & tools for carrying out virtual inspection of structures
- Future perspectives – How will virtual inspection, the principles of BIM and asset management merge?

**Finn Raun Gottfredsen**, Project Director, COWI, Denmark

#### 11:30 Hybrid Bridges: A Field for Innovation in Structural Engineering

- Definition of hybrid structures
- Hybrid bridges in construction history
- Contemporary hybrid bridges
- New trends and future developments in hybrid bridges

**Jose Romo**, CEO, FHECOR, Spain

#### 12:00 Computational Design and large-scale 3D Printing for Bridge Building: Current & Future Applications

- Key challenges the bridge construction industry must face
- Benefits of computational design and large-scale 3D printing vs. traditional bridge design & construction methods
- Bridge use cases: Current performance and limits
- Technological & market trends

**Jean-Daniel Kuhn**, Managing Director, XtreeE, France and **Hyuk Brands**, CEO, Haasnoot Bruggen, The Netherlands

12:30  Lunch

### V. The Value of Bridge Building Materials

#### 13:30 Design Guidelines for Optimal Use of High Strength Steel in Bridges

- Design of highway bridges using High Strength Steel (HSS)
- Comparative design of a 80m highway deck in standard S355 and HSS S690 using EC3-1-5
- New deck forms to solve local buckling and fatigue issues

**José Oliveira Pedro**, Assistant Professor – University of Lisbon, Portugal

#### 14:00 Pre- and Post-tensioning with Carbon Fibres

- Building with carbon fibre reinforced polymere
- Pre- and posttensioning concrete with carbon fibres
- Integral and elegant concrete bridges
- The importance of Baukultur

**Mike Schlaich**, Professor at Technische Universität Berlin and schlaich bergermann partner, Germany

#### 14:30 The Value of building Bridges with Fiber Reinforced Polymers

- Advantages and challenges of FRP bridges
- State of the art of FRP bridges in the Netherlands
- Durable, flexible and sustainable infrastructure using FRP
- Trends and developments in FRP bridges

**Liesbeth Tromp**, Lead engineer FRP, Royal HaskoningDHV, The Netherlands

#### 15:00 Panel Discussion – How can good Design, Procurement and Realization of Bridges enhance their Value to Society?

Moderator: **Joris Smits**, Lead Architect & Bridge Designer, Royal HaskoningDHV, The Netherlands

#### 15:30 Closing remarks

15:45 End of conference

International VDI Workshop

# Bridge Assessment and Rehabilitation

## Workshop Chair:

Marco Petrangeli, CEO, INTEGRA Ingegneria Territorio Grandi Infrastrutture Srl, Italy

## Date and Venue:

June 24, 2019

NOVOTEL Rotterdam Brainpark, The Netherlands

## Time:

10:00 - 16:00

This workshop is dedicated to the assessment and rehabilitation of the existing bridge stock. Following the collapse of the Polcevera viaduct in Genoa and the bitter ongoing trial, a discussion is arising on the suitability of the technical and legal instruments we have to face this ordeal.

Who is in charge and can be held responsible for the enormous number of old bridges along the public road network? Are there technical specifications we can enforce onto the public and private concessionaire for the monitoring and assessment of their bridge stock? Which is the legal framework for the re-commissioning of the bridge stock. What are the true costs, CO2 adjusted of replacing a bridge? Can the new materials and ensuing weight savings allow the reuse of foundation and piers?

Dedicated to the participants of the VDI conference and its members the workshop will be truly interactive. The workshop setup is as follows. (1) A brief introduction to workshop theme. (2) each one of the main topics is introduced profiting from the participant experience and case studies followed by open discussion from participants and audience (3) a brief resume of the main topics and suggestions for final discussion (4) open discussion of the main findings and case studies presented (5) Closure.

## Agenda

- Introducing the bridge assessment and repair
- The Polcevera Viaduct collapse and other major age-related failures
- Structural causes for collapse and corresponding strengthening strategies
- Monitoring and inspection of bridges
- Assessment and re-commissioning, a legal, financial and risk management perspectives
- Main findings of the workshop day
- Outlook into the future of the art of the possible

(Please note that the number of participants is limited. Registrations and individual parts and segments of the workshop are subject to confirmation)



## Exhibition / Sponsoring

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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:

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Email: floherschuetz@vdi.de

## Supporting Experts

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**Dipl.-Ing. Rüdiger Schidzig** Geschäftsführender Gesellschafter, SZG – engineering & managing, Nürnberg

**Joris Smits** Architect & Bridge Designer, Royal HaskoningDHV, Rotterdam

**Prof. Mike Schlaich** Professor, TU Berlin, Berlin

## Become a speaker

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Become a speaker at our international VDI Conferences. Make yourself known in the industry and discuss best practice examples with other international experts. We are looking for speakers on: Building Information Modelling and Smart Construction Equipment.

Please submit your topic to:

**Maria Baumeister**  
Product Manager International Business  
Phone: +49 211 6214-284  
Email: baumeister@vdi.de

# Registration

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## Terms and Conditions

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**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

NOVOTEL Rotterdam Brainpark  
K.P. van der Mandelelaan 150  
3062 MB Rotterdam, The Netherlands  
Phone: +31 10/2509002  
Email: h1134@accor.com



You will find more hotels  
close to the venue at  
[www.vdi-wissensforum.de/hrs](http://www.vdi-wissensforum.de/hrs)

**Hotel room reservation:** A limited number of rooms has been reserved for the benefit of the conference participants at the NOVOTEL Rotterdam Brainpark. 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 June 25, 2019.

**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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## Register online!

[www.vdi-international.com/07K0903019](http://www.vdi-international.com/07K0903019)



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Yes, I will participate as follows:

### Participation Fee + VAT

**VDI Conference 25.-26.06.2019**  
(07K0903019) € 1390

**Workshop 24.06.2019**  
(07ST903001) € 850

### Package Price (Please tick the boxes)

(Conference + 1 Workshop) € 2010

I am interested in sponsoring and/or exhibition

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

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