Oswald Klingmueller, Dr.-Ing., of GSPmbH Mannheim
Frank Rausche, Dipl.-Ing., Ph.D., P.E., of Pile Dynamics, Inc. Cleveland
Matthias Schallert, Dr.-Ing., of GSPmbH Mannheim

Present

A 2-Day Workshop on
Dynamic Pile Testing and Wave Equation

Wednesday May 6th and Thursday May 7th, 2015
at
Radisson Blu Hotel Amsterdam Airport
Boeing Avenue 2 - 1119 PB Schiphol-Rijk
Tel +31 20 655 3131 - Fax +31 20 655 3100

" Vincent Van Gogh, Langlois Bridge at Arles (Wallraf-Richartz-Museum) ". Wikimedia Commons, copied 2014
Dynamic Foundation Testing and Analysis
by Dr. Frank Rausche, Dr. Oswald Klingmueller, Dr. Matthias Schallert

Wednesday May 6th

High Strain Testing

8:00  Registration
8:30  Introduction to Dynamic Pile Testing for structural integrity and geotechnical capacity
9:15  Wave Mechanics – theory of propagation of stress waves in piles and application to high strain testing by the Pile Driving Analyzer® (PDA) system
10:00  Coffee break
10:15  PDA testing: basic requirements for meaningful measurements
11:30  PDA data interpretation; data quality assessment and CASE method data interpretation, measurement and analysis of vibratory driving
12:30  Lunch
13:30  CAPWAP® software background: pile, soil models, procedure and results
14:30  CAPWAP; step-by-step signal matching of dynamic records
15:00  Break
15:15  CAPWAP demonstration continued
15:45  Dynamic loading systems, remote testing and results obtained on driven and drilled shafts
16:45  Adjourn
17:00  Dynamic Measurement and Analysis Proficiency Test - Please see page 5

Thursday May 7th

Wave Equation Analysis of Pile Driving - GRLWEAP

8:00  Registration
8:30  Introduction to simulation of pile driving by GRLWEAP
      One dimensional wave propagation and hammer properties;
10:15  Break
10:30  Demonstration of calculation of Bearing Graph
12:30  Lunch
13:30  Demonstration of Pile Driveability and pile material fatigue calculation
14:30  Coffee Break
15:00  Examples of problem solving and simulation of vibratory driving
16:00  Refined wave equation analysis
16:45  Discussion
17:00  Adjourn

Registration also includes break refreshments and lunch.
Learning objectives:
At the end of the first day attendees will be able to:

- Understand the basic operation of the Pile Driving Analyzer© (PDA) system
- Differentiate between good quality and poor quality data
- Assess pile bearing capacity, pile driving stresses, hammer performance and pile integrity using PDA measurements
- Understand the basic models used in the GRLWEAP analysis
- Avoid pitfalls when analyzing PDA data with the CAPWAP© software
- Interpret PDA testing and CAPWAP software results
- Describe the soil-model used in CAPWAP
- Calculate bearing capacity and its distribution for driven piles from impact records

At the end of the second day attendees will be able to:

- Understand the GRLWEAP hammer, pile and soil models
- Prepare input for both bearing graph and driveability analyses
- Perform a dynamic pile analysis with the GRLWEAP program
- Assess the likelihood of pile damage or refusal during pile driving
- Formulate a driving criterion
- Reanalyze with the wave equation after dynamic testing has been completed

Who should attend:

- Users of the PDA system and CAPWAP software interested in sharpening their skills.
- Users of the wave equation approach.
- Specification writers of deep foundation quality assurance programs
- Engineers, foundation testing professionals, students, and professors already familiar with the basic concepts of deep foundation design and construction control.
- Professionals who desire to have a basic understanding of the dynamic test results being presented to them.
- Those interested in taking the Dynamic Measurement and Analysis Proficiency Test

Workshop Lecturers

Dr.-Ing. Oswald Klingmueller is Managing Director of GSP mbH, Mannheim Germany; he has 30 years of experience in Dynamic Pile Testing and is Chairman of the German Committee for Dynamic Pile testing. In this capacity he is involved in formulating German codes of practice and issuing recommendations for dynamic pile testing. Dr. Klingmueller has recently been very active in managing dynamic pile testing works for wind turbines associated structures in the North Sea and the Baltic Sea.

Frank Rausche, Ph.D., P.E., D.GE, is a principal of Pile Dynamics, Inc. (PDI) and of GRL Engineers, Inc. He has been involved in the research and development of dynamic testing and analysis methods since his mid-1960s work at Case Western Reserve University, where he derived the Case Method equations for dynamic pile testing and developed the CAPWAP and GRLWEAP software. Dr. Rausche has been a consultant throughout his career applying the dynamic and testing methods to solve practical problems on construction sites. He has published numerous papers and lectures frequently both in the USA and internationally.

Dr.-Ing. Matthias Schallert is Managing Director of GSP mbH, Mannheim Germany; he has 20 years of experience in Dynamic Pile Testing and is member of the German Committee for Dynamic Pile testing. Dr. Schallert has recently been very active in piling works for wind turbines in the North and Baltic Sea. He has formulated method statements, procedures for sensor attachment and handling of instrumented piles, risk assessment, quotations and has executed the tests in various offshore operation on board of jack ups and driving vessels. He has wide experience in evaluation of measurements, geotechnical assessment and reporting for submittal to public administrative boards.
**Synopsis**
Deep foundations using piles are becoming increasingly important for the modern infrastructure. In high-rise office buildings, the need for open floors without walls lead to architectural solutions with fewer columns having to support greater concentrated loads. Loads on bridge foundations have increased because of longer spans and increased and heavier train and/or truck traffic. Recently, new challenges have come from the installation of offshore wind turbines in deep water where very large foundations are needed to resist high wind and wave action in difficult soil conditions.

A number of codes, regulations, and standards in different countries are available for the design of piled foundations. However, these provide only a framework for the design. The pile designers must therefore have profound knowledge of soils and piles in order to achieve a safe and economic design. This workshop has been designed to provide the profession with the necessary knowledge and experiences about current state-of-the-practice methods for the design, construction and testing of piled foundations.

During the 2-day workshop Dr. Frank Rausche, Dr. Oswald Klingmüller and Dr. Matthias Schallert will present and/or demonstrate the theory and applications of dynamic pile testing and analysis methods. The presentations include a refresher on the mechanical theory of propagation of stress waves in long and slender rods, and how this theory applies to the measurement and interpretation of piles under short duration loads. Numerous examples of measured data from actual construction sites are analyzed. The results are put into the context of the EC7 and other codes and specifications.

**Workshop Material**
Registrants will receive the presentations both on hard copy (gray scale) and in electronic form in color.

**Certificate of Participation**
A Certificate of Participation documenting the number of hours of instruction will be provided.

**Venue and Hotel Reservations**
The Radisson Blu is located within a short distance from Amsterdam Schiphol airport. A shuttle departs from Schiphol Airport every half hour.

**Attendees should make their own hotel reservations.**
20 rooms have been reserved in classic category single at 179 €/night.
For reservations go to
www.radissonblu.com/hotel-amsterdamairport
or send email to
reservations.amsterdam.airport@radissonblu.com
with use of the code GSP-PDI-Workshop

Please note that the number of participants is limited to 35.
Registration Information

Please fax, mail or e-mail this completed registration form to:

GSP Gesellschaft für Schwingungsuntersuchungen und dynamische Prüfmethoden mbH
Steubenstrasse 46 - 68163 Mannheim, Germany
Tel: +49 621 331 361 Fax: +49 621 343 358 info@gsp-mannheim.de

Name(s): ____________________________________________
Organization: ________________________________________
Address: ____________________________________________
City: __________________________ State, Province, County or Canton: ______________________
Postal Code: ___________ Country: ______________________
Phone: _______________ Fax: _______________ Email: __________________________

Fees: 1st-day registration € 400,-
2nd-day registration € 400,-
total fee for 2 days before discounts € 750,-

Discounts:
A € 25 discount will be granted if registration with full payment is received prior to April 1, 2015.
A € 25 per day discount will also be granted for second or additional participants from the same entity.
A € 150 per day discount will be extended to students providing current student ID (no other discounts).

VAT to be added

The GRLWEAP 2010 software (first or update license) will be offered at a 10% discount to participants of the workshop at either the time of registration or within one month following the workshop.

Please check all the days to be attended □ 1st Day □ 2nd Day

Note: The greatest benefit would be expected from attending both days since the first day’s introductions support the presentations and demonstrations of the second day

Total fee per registrant € ______ x No. of registrants; enter total here: €_______
Discount(s) (if applicable) subtract € ______
PDCA proficiency examination € ______ x No. of registrants; enter total here: €_______
total € ______

Payment may be made in Euros by bank transfer against invoice to GSP Mannheim or by credit card

Please select: □ VISA □ MasterCard □ American Express

Name (as on credit card): ____________________________________________
Account No.: ___________________________ Expiration date: ___/ ___Verification code: ________
Statement Billing Address: ____________________________________________
City ___________________________ State, Province, County, or Canton ________________
Postal Code ___________________________ Country ____________________________

Signature: ____________________________________________________________
High Strain Testing Proficiency Examination

At the end of the First Day Workshop, participants may take a multiple choice Dynamic Measurement and Analysis Proficiency Test which will take at most 1.5 hours to complete. The test will cover the theory of Wave Mechanics, Case Method equations, data quality assessment, data interpretation and basic CAPWAP analysis. The test is designed for those with experience in using the Pile Driving Analyzer (PDA) system and CAPWAP to perform High Strain Dynamic Foundation Tests. The best preparation for the test is work experience following an initial PDA training. The workshop will refresh the participant’s theoretical background and be a reminder of some important points. Those taking the test are advised to study the 2012 Version of “Appendix A” and “Helpful Hints” of the PDA manual, review some of the example data provided with the PDA, and read the CAPWAP background material. These materials are supplied with PDA purchases. Those without access to the manuals and examples, please contact jfox@pile.com in advance of the test date.

A Certificate of Proficiency in High Strain Dynamic Pile Testing will be awarded by the Pile Driving Contractors Association to those who pass the test. The achieved level of proficiency indicated on the Certificate is dependent on the score achieved on the test. Those who do not pass the test will receive full credit of test registration fee to be applied toward retaking the test at the next opportunity.

For more information about the Proficiency Test website: www.PDAProficiencyTest.com.

(A) Fees
The Dynamic Measurement and Analysis Proficiency Test (“High Strain Proficiency Test”) is administered by the Pile Driving Contractors Association (www.piledrivers.org), which issues a certificate of proficiency after successful completion of the Test. For further details, please see the Proficiency Test website. The fee for this test is € 200.

(B) Total fees

Number of Persons taking the High Strain Proficiency Test __ x € 200 = € _____

Total fees (please enter here and on Registration sheet) € _____