CONTENTS

WELCOME MESSAGE

The scientific and professional community concerned by experimental vibration analysis of civil engineering structures has taken positive steps in recent years to develop more comprehensive and rational procedures for dynamic assessment. It was therefore considered appropriate to bring together all of the very best work that has been done in this field at the EVACES'05 conference, held in Bordeaux, France, October 26-28, 2005. The interest of the scientific and professional community has been confirmed during the EVACES'05 conference and it was decided soon after to pursue the experience. The EVACES'07, held in Porto, Portugal, October 24-26, 2007 is thus the second EVACES conference. The EVACES conferences encompass all the major aspects of dynamic testing. Compared to the EVACES'05, the total number of papers scheduled for presentation has increased by 67 to 138, proving the need for an international sharing in the field of operational vibration analysis.

The EVACES'07 proceedings cover numerous case studies and the results of new research. All major aspects of experimental vibration analysis are addressed: vibration measurement, sources of excitation, data analysis, vibration measurements in large structures, vibration isolation and mitigation, system identification and model updating, structural integrity assessment, structural monitoring, wave propagation, methodologies and standards, effects of shock and vibration on humans and facilities, in-situ and laboratory experiments, seismic tests, dynamic tests of historical constructions and dynamics of railway bridges. The abstracts and the full contributions, including 6 keynotes and 132 technical papers from 30 countries, are assembled in the book of abstracts and in the CD-ROM Proceedings, respectively. This book and the CD-ROM will serve as a valuable reference on the recent developments in experimental vibration analysis applied to civil engineering structures.

In order to widen the contribution of all participants, the conference format shall comprise keynote lectures, plenary and parallel sessions, so that all papers are orally presented. The conference venue, located at the Campus of the Faculty of Engineering of the University of Porto (FEUP), will provide sufficient space for the conference activities, including the Technical Exhibition.

The historical and most important in the Northern region of Portugal city of Porto has a mild climate and offers the necessary infrastructures for success of the event. Besides, the old town, the outstanding bridges, the caves, the typical streets, the churches and old monuments that Porto displays, a variety of scenic places can be found in the North region, such as Guimarães, Ponte de Lima, Viana do Castelo and Braga, and in particular along the extraordinary Douro Valley, where the famous Porto wine comes from.

The answer of the EVACES community has been quite good, and three excellent days of presentations and fruitful discussions can be expected. Therefore, we are really pleased to welcome you at FEUP, and we expect that you really enjoy your visit to Porto.

Porto, October 2007

Álvaro Cunha and *Elsa Caetano*
Christian Cremona

ORGANIZING COMMITTEE

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C. Taylor, United Kingdom
C. Ventura, Canada
C.Y Wang, Taiwan
H. Wenzel, Austria
A. Wicks, USA

GENERAL INFORMATION

Venue

The conference will be held at the Campus of the Faculty of Engineering of the University of Porto (FEUP), located at R. Dr. Roberto Frias, in Porto.

Dates

The conference will take place in the period 24-26 October 2007 (Wednesday to Friday).

Secretariat

The registration and information desk will be open in the following periods:

Tuesday, October 23	16.00-19.00
Wednesday, October 24	8.00-19.00
Thursday, October 25	8.00-19.00
Friday, October 26	8.00-19.00

Internet

Access to Internet is provided at the Participants Living Room, called “Sala de Actos”.

FEUP also provides wireless access to Internet, based on the Web Login system.

This service has no specific requirements of hardware or software, allowing the access to any equipment with wireless capacity and an Internet browser. The conference participants can connect to the SSID guest-e-U announced by FEUP, introducing the following credentials in a login page and accessing the Internet:

Login: evaces
Password: feup07

Owing to the nature of this service, the Internet connection is restricted to http and https protocols.

Coffee-breaks

Coffee will be served daily, during the morning and afternoon breaks, at the Auditorium ground floor.

Lunches

During the three days of conference, the lunch will be served at the Grill of FEUP Cantine.

Conference Reception

The Conference Reception will take place at the *Caves of Real Companhia Velha*, on the 24th October at 19h30.

Conference Dinner

The Conference Dinner will be held at *Salão Árabe do Palácio da Bolsa*, on the 25th October at 20h.

Buses

The Organizing Committee will provide a bus service for the Conference Reception and Conference Dinner.

Identity Cards

The participants will receive identity cards, which must be always visible during the conference.

These cards refer the name, affiliation and country of each participant, and include also one of the following codes:

OC – Organizing Committee
SC – Scientific Committee
SE – Secretariat
FR – Full Registration
ST – Student
SP – Sponsor
EX – Exhibitor
FE – FEUP student

PROGRAMME ORGANIZATION

Programme format

In order to allow the oral presentation of all papers, the Conference Programme comprises, in each half day (morning or afternoon), 1 Keynote Lecture, 1 Plenary Session and 3 Parallel Sessions. There will be also Opening and Closing Sessions.

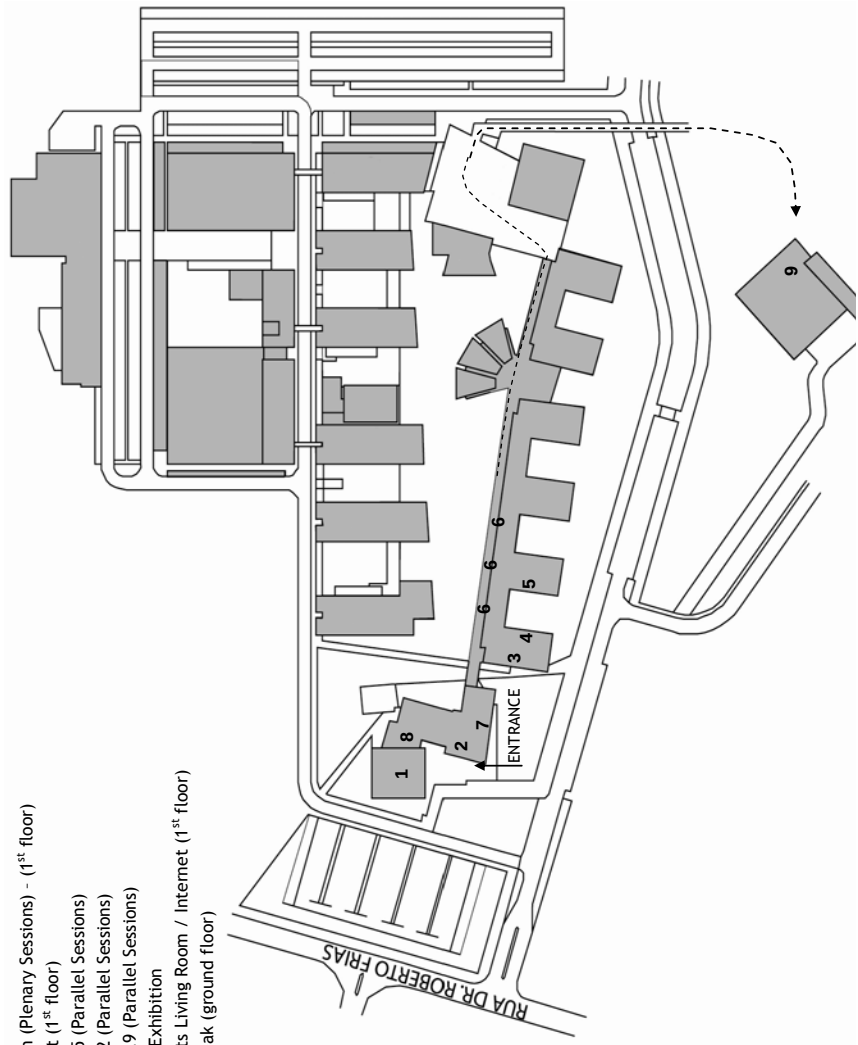
The Opening and Closing Sessions, the Keynote Lectures and the Plenary Sessions will take place at the Auditorium, whereas the Parallel Sessions will be developed in three smaller rooms: Rooms B032, B035 and B029.

Day 1	24th October
08:00-09:00	Registration
09:00-09:30	Opening Cerimony
09:30-10:00	Keynote
10:00-11:00	Plenary session
11:00-11:30	Coffee-break
11:30-13:00	Parallel sessions
13:00-14:30	Lunch
14:30-15:00	Keynote
15:00-16:00	Plenary session
16:00-16:30	Coffee-break
16:30-18:15	Parallel sessions
18:30	Bus – Reception
19:30	Reception at Caves

Day 2	25th October
09:00-09:30	Keynote
09:30-11:00	Plenary session
11:00-11:30	Coffee-break
11:30-13:00	Parallel sessions
13:00-14:30	Lunch
14:30-15:00	Keynote
15:00-16:00	Plenary session
16:00-16:30	Coffee-break
16:30-18:30	Parallel sessions
19:00	Bus – Banquet
20:00	Banquet

Day 3	26th October
09:00-09:30	Keynote
09:30-11:00	Plenary session
11:00-11:30	Coffee-break
11:30-13:00	Parallel sessions
13:00-14:30	Lunch
14:30-15:00	Keynote
15:00-16:00	Plenary session
16:00-16:30	Coffee-break
16:30-17:15	Parallel sessions
17:30	Closing Cerimony

Plan of FEUP


1 - Auditorium (Plenary Sessions) – (1st floor)
2 – Secretariat (1st floor)
3 - Room B035 (Parallel Sessions)
4 - Room B032 (Parallel Sessions)
5 - Rooms B029 (Parallel Sessions)
6 - Technical Exhibition
7 – Participants Living Room / Internet (1st floor)
8 - Coffee Break (ground floor)
9 - Lunch
ENTRANCE
RUA DR. ROBERTO FRIAS

Conference topics

The allocation of the papers to the Plenary and Parallel Sessions was made taking into account the following sequence of Conference Topics:

1. Vibration measurement (transducers, techniques…)
2. Sources of excitation (testing machines, traffic loads, ambient excitation)
3. Concepts in vibration data analysis (modal analysis, wavelets, non linear, non stationary processes, stochastic methods)
4. Vibration measurement in large structures
5. Vibration isolation and mitigation (passive damping, semi-active and active control)
6. System identification and model updating
7. Structural integrity assessment
8. Structural monitoring
9. Wave propagation
10. Methodologies and standards
11. Effects of shock and vibration on humans and facilities
12. In-situ and laboratory experiments, benchmarks
13. Earthquake engineering tests
14. Dynamic testing of historical constructions
15. Dynamics of railway bridges

INFORMATION FOR AUTHORS

Presentation files

Authors must deliver their powerpoint presentations to the technical staff of Evaces present in each room (Auditorium, B035, B032 or B029), at least during the 30 minutes before the corresponding session.

The author that will present each paper must be at the room defined at the Technical Programme 15 minutes before the beginning of the session, in order to participate in a brief meeting with the session chairs.

TECHNICAL PROGRAMME

WEDNESDAY, 24 OCTOBER – MORNING

9:00-9:30 Opening Cerimony (Auditorium)

FEUP Dean,	Carlos Costa
Head of Civil Eng. Dept. FEUP,	Ferreira Lemos
Chairman of the Organizing Committee,	Álvaro Cunha
Co-Chairman of the Organizing Committee,	Elsa Caetano
Chairman of the Scientific Committee,	Christian Cremona
IABSE Representative,	Fernando Branco
SAMCO Representative,	Helmut Wenzel
IABMAS Representative,	Joan Casas
SEM Representative,	Carlos Ventura

9:30-10:00 Keynote Lecture (Auditorium)

Chairs: E. Caetano, J. Brownjohn

The development of experimental methods in structural dynamics
R.T. Severn

10:00-11:00 Plenary Session (Auditorium)

Chairs: G. De Roeck, P. Paultre

Microwave interferometer for ambient vibration measurement on civil engineering structures: 1. Principles of the radar technique and laboratory tests
G. Bernardini, G. De Pasquale, A. Bicci, M. Marra, F. Coppi, P. Ricci & M. Pieraccini

Experimental validation and calibration of pedestrian loading models for footbridges
F. Ricciardelli, C. Briatico, E. T. Ingolfsson & C. T. Georgakis

Comparison of stochastic identification methods applied to the natural response of Millau Viaduct
E. Caetano, F. Magalhães, A. Cunha, O. Flamand & G. Grillaud

Dynamic response of the painter street overpass at different levels of ground shaking
C. E. Ventura & Kian Mirza

11:30-13:00 Parallel Session A (Room B032) – **Topic 1**

Chairs: C. Gentile, F.S. Barbosa

Microwave interferometer for ambient vibration measurements on civil engineering structures: 2. Application to full-scale bridges
G. Bernardini, G. De Pasquale, N. Gallino & C. Gentile

Advanced vibration measurement system using laser Doppler vibrometers for structural monitoring
T. Miyashita, H. Ishii, K. Kubota & Y. Fujino

System identification and monitoring by using low-cost MEMS sensors
L. Martinelli & C. Gentile

Development of a vision system for vibration analysis
S. Silva, J. Bateira & E. Caetano

Evaluation of structural displacements via image processing
A. R. Vilela, A. A. Cury, F. S. Barbosa & F. M. A. Nogueira

The dynamic strain sensor - an optical alternative to geophone measurements
B. Müller, I. Baumann & J. Meissner

11:30-13:00 Parallel Session B (Room B029) – **Topics 1, 2**

Chairs: T. Murray, F. Ricciardelli

Statistical characterisation of parameters defining human walking as observed on an indoor passerelle
S. Živanović, V. Racić, I. El-Bahnasy & A. Pavić

Lateral vibration of footbridges under crowd-loading: on the modelling of the crowd-synchronization effects
J. Bodgi, S. Erlicher & P. Argoul

Multiple vehicle axle load identification from dynamic bridge response: An experimental study
P. Asnachinda, T. Pinkaew & J. A. Laman

Development of a realistic dynamic load model of a fork-lift truck
A. Ehland, M.S. Williams & A. Blakeborough

A long term monitoring system for vibration control of civil structures
M. Viscardi, G. Isernia, F. Amoroso & L. Lecce

11:30-13:00 Parallel Session C (Room B035) **- Topics 3, 4**

Chairs: P. Anderson, A. Campos-Costa

Estimating modal parameters of civil engineering structures subject to ambient and harmonic excitation
P. Andersen, R. Brincker, C. Ventura & R. Cantieni

A statistical regularization technique for the spectral estimation of irregularly sampled data
D. Daucher, D. Clair & M. Fogli

Subspace-based identification of time-varying system
Z. Y. Shi & H. N. Li

Dynamic bridge test
Z. Peric, D. Tkalcic & M. Zupcic

Dynamic identification of a R.C. bridge in NE Italy
S. Noro, P. Franchetti, C. Modena, E. Ravazzolo & A. Leonardi

Using the software LNEC-SPA to assess the dynamic characteristics of an important state building (oral only)
L. Mendes, A. Campos-Costa, E. Coelho

WEDNESDAY, 24 OCTOBER – AFTERNOON

14:30:-15:00 Keynote Lecture (Auditorium)

Chairs: C. Cremona, H. Wenzel

Monitoring of bridges and transportation infrastructures using vibration techniques
Y. Fujino & D.M. Siringoringo

15:00-16:00 Plenary Session (Auditorium)

Chairs: Y. Fujino, J. Casas

Prototype of exciter for railway bridge testing
W. Skoczynski, A. Roszkowski, J. Bien & J. Zwolski

Stress measurements in the main cable of a suspension bridge under dead and traffic loads
M. Talbot, J.-F. Laflamme & B. Glišić

Identification of the source, impact and damping of stay-cable vibrations
A. Larsen & J.E. Andersen

A peculiar case of non-linear cable resonance combination of a cable-stayed bridge submitted to wind and traffic
O. Boujard, S. Pernot, C.H. Lamarque & A. Berlioz

16:30-18:15 Parallel Session A (Room B032) **- Topic 4**

Chairs: A. Larsen, C. Rebelo

The safety of the Millau Viaduct during the deck launching
V. de Ville de Goyet, J.-M. Crémer & J.-Y. Del Forno

Comparison of damping estimates from ambient and free vibration tests in large structures
F. Magalhães, A. Cunha & E. Caetano

Dynamic field performance of a wooden trough bridge
A.Gülzow, R. Steiger, D.Gsell, W.Wilson & G. Feltrin

Vibration testing of Taylor Bridge
J. Carvajal, C. Ventura & K. Thibert

Modal identification of the Parque da Paz roadway and railway viaducts
J. Rodrigues & M. Ledesma

Full-scale dry inclined stay-cable vibrations: modelling by non linear quasi-steady analysis of wind tunnel tests
O. Boujard & G. Grillaud

Vibration assessment of traffic viaduct: field measurement and computer simulation to develop mitigation measures
H. Takemiya, F. Chen & J. Shimabuku

16:30-18:15 Parallel Session B (Room B029) **- Topic 5**

Chairs: L. Guerreiro, N. Roitman

Cable vibrations in the Alamillo bridge (Sevilla, Spain): assessment and remedial actions
J. R. Casas & A. C. Aparicio

Developing a semi-active squeeze mode MR damper for the vibration control of civil structure and testing its dynamic performance
G. Heo, J. Jeon, M. G. Kim, G. Lee & D. Lee

Influence of scrap rubber tires and steel fibers on the damping characteristics of normal concrete
F. M. Resende, N. Roitman, C. Magluta & R. D. Tolêdo Filho

EDF (Elastic and Damping Forces) algorithm for semi-active control
C. Oliveira & L. Guerreiro

Improving the control of multi-body structures under external disturbances
D.T. Branson, D.G. Tilley & P.S.Keogh

Numerical and experimental assessment of a viscoelastic sandwich beam element
F. S. Barbosa, M. C. R. Farage & W. N. F. Filho

16:30-18:15 Parallel Session C (Room B035) – **Topic 6**

Chairs: M. Basseville, B. Weber

Use of time-frequency domain decomposition for unknown-input modal testing
T.-P. Le & P. Paultre

Uncertainty analysis of modal parameters obtained from SSI
E. Reynders & G. De Roeck

Model updating and damage detection of an aluminum truss with double eigenvalues
B. Weber, P. Paultre & J. Proulx

Ambient vibration analysis using rational fraction polynomial method
C.J. Ku, Y. Tamura & A. Yoshida

Output-only modal identification: A toolkit for LabView
W. Hu, A. Cunha & E. Caetano

Sensitivity studies on damping estimation
G. Gutenbrunner, K. Savov & H. Wenzel

Finite element model updating of a RC bridge deck with indeterminate supports
N.C. Hoang & J. S. Owen

THURSDAY, 25 OCTOBER – MORNING

9:00-9:30 Keynote Lecture (Auditorium)

Chairs: A. Pavic, A. Adão da Fonseca

Control of lateral vibrations in footbridges. Implementation of passive devices for vibration control at Coimbra footbridge
E. Caetano, A. Cunha & C. Moutinho

9:30-11:00 Plenary Session (Auditorium)

Chairs: A. Pavic, M. Dhanasekar

Forced vibration and output-only procedures for estimating modal mass in structures
J.M.W. Brownjohn & A. Pavic

Designing tuned mass damper systems for uncertain structural parameters
M. Kasperski

Adaptive tuned mass damper based on pre-stressable leaf-springs
D. Gsell & G. Feltrin

Experimental dynamic behaviour and vibrations mitigation of bell towers
A. Fournol

The "Santuario della Madonna delle Lacrime" in Siracusa as recent application of structural isolation and health monitoring
G. Serino, M. Spizzuoco & M.R. Marsico

Determination of railhead-wheel contact-impact through measured strain signatures
M. Dhanasekar, T. Pang, T. Ashman & I. Marks

11:30-13:00 Parallel Session A (Room B032) **– Topic 4**

Chairs: M. Çelebi, C.S. Oliveira

On the variation of fundamental frequency (Period) of an undamaged building – a continuing discussion
M. Çelebi

Simple modal analysis and wave propagation for practical floor experiments in new and old office and residential buildings
L. Auersch & S.Said

Ambient vibration analysis of steel structure
A. A. Kasimzade & S. Tuhta

Dynamic behavior of various types of pedestrian bridges
C. S. Oliveira & T. N. Silva

Operational Modal Analysis (OMA) and its applications to experimental vibration analysis of civil engineering structures
S. Maalek, R.Akbari & S. Ziaei-Rad

Operational modal analysis of a post-tensioned concrete skew bridge before and after replacement of its elastomeric bearings
S. Maalek, R. Akbari & S. Ziaei-Rad

11:30-13:00 Parallel Session B (Room B029) – **Topic 5**

Chairs: A. Fournol, C. Moutinho

Active vibration control with actuators and passive methods for vibration isolation of sensitive equipment in research and production – a comparison based on measurements
M.O. Rosenquist

Shape memory alloys in structural vibration control
F.P.A. Santos & C. Cismasiu

Vibration elimination of slender constructions resulting from ground motions
K. Majcher, Z. Wójcicki & A. Brząkała

Semiactive elimination of parametric excited vibration
A. Brzakala, Z. Wojcicki & K. Majcher

Civil structures protection strategies based on semi-active tuned mass damper
C.Casado, C.Cardenas & A. Poncela

Experimental vibration analysis for civil engineering structures
D.I. Banic, M. Zupcic & D. Tkalcic

11:30-13:00 Parallel Session C (Room B035) – **Topics 6, 7**

Chairs: G. Serino, F. Magalhães

Vibration-based damage identification of steel and reinforced concrete beams using FEM updating with application of fuzzy uncertainty
E. O. Arman, D. Degrauwe, E. Reynders & G. De Roeck

Sampling intervals for damage detection
A. Balliere, R. Leconte & C. Cremona

Investigation on the applicability of ARA for damage detection in steel structures
C. König, J. Medgenberg, T. Ummenhofer & S. Rieth-Hoerst

Damage assessment of civil engineering structures by the observation of non-linear dynamic behaviour
M. Waltering, V. Bungard, D. Waldmann, A. Zürbes, S. Maas & G. De Roeck

Structural dynamic analysis by finite element models experimentally identified: an approach using modal data
J. F. B. Meireles, A. C. M. Pinho, J. A. C. Ambrósio & J. M. Montalvão e Silva

Experimental determination of dynamic properties of the concrete foundation of a cement roller mill
V. Denoël, C. Butz, H. Jakobi & M. Feldmann

THURSDAY, 25 OCTOBER – AFTERNOON

14:30:-15:00 Keynote Lecture (Auditorium)

Chairs: A. Cunha, R. Cantieni

Offshore wind energy plants – Problems and possible solutions
W. Rücker

15:00-16:00 Plenary Session (Auditorium)

Chairs: R. Cantieni, J. Rodrigues

Modal filtering data reduction and subspace detection for handling the temperature effect in SHM
H. Nasser, A. Deraemaeker, L. Mevel & M. Basseville

Damage detection in an old riveted steel bridge
R. Leconte, F. Goepfer, C. Cremona & L. Dieleman

Effect of frequency scattering in frequency based damage identification
M. Ralbovsky, S. Deix & R. Flesch

Damage identification of shear connectors with wavelet packet energy by suing vibration measurements
W.-X. Ren, Z.-S. Sun, Y. Xia, H. Hao & A. J. Deeks

16:30-18:30 Parallel Session A (Room B032) – **Topics 8, 9, 11**

Chairs: M. Kasperski, G. Heo

Structural monitoring of the I-5/Voigt Drive Bridge, San Diego County, California
M. Fraser, X. He, A. Elgamal & J.P. Conte

Development of a smart monitoring system based on ubiquitous computing technique for infra-structural system: centering on identification of dynamic characteristics of self-anchored suspension bridge
G. Heo, J. Lee, G. Lee, H. C. Shin & Y. D. Her

Examinations of tendons of post-tensioned and prestressed concrete bridges
H. Weiher, Ch. Gläser & K. Zilch

Urban damages due to the vibration propagation in the ground: a case of study
S. Datoussaïd, G. Guerlement & T. Descamps

Randomness in the dynamic characteristics of the coupled system structure and occupants
E. Agu & M. Kasperski

Vibrations upon the production building at the Itaipu Power Plant
M. A. C. Juliani, L. Becocci, A. S. Fiorini & M. A. L. Paredes

Evaluation of vibration influence on buildings
Matej Zupcic, Davor Banic & Damir Tklacic

Effect of vibrations induced by household activities on high-rise buildings
E. Lam

16:30-18:30 Parallel Session B (Room B029) – **Topic 7**

Chairs: C.J. Ku, C.-Y. Wang

Damage assessment of a model bridge by dynamic and static stiffness recovery
A. Künzel & Y.S. Petryna

Time domain identification of steel braced frames: study on the influence of buckling of diagonal members
M. De Angelis, E. Grande & M. Imbimbo

A hybrid technique of damage assessment using experimental data and computational modelling
F. S. Barbosa, A. A. Cury, C. C. H. Borges & C. Cremona

Evaluation of damage detection methods applied to the dynamic simulations of cracked composite bridges
R. Salgado & P.J.S Cruz

Symptom based reliability and generalized repairing cost in monitored bridges
R. Ceravolo, A. De Stefano & M. Pescatore

Damage assessment of structure by the reciprocal theorem of elastodynamics and the frequency domain decomposition method
C.-Y. Wang, C.-H. Chiang & C.-K. Huang

Disturbance detection in bridge cables using experimental measured Frequencies Response Function (FRF)
L. Dieng, D. Bruhat & R. Michel

Condition monitoring of large structures using piezoelectric transducers
S. M. Williams

16:30-18:30 Parallel Session C (Room B035) **– Topics 4, 9**

Chairs: R. Delgado, D. Gsell

Dynamic testing of cable-stayed footbridge with glued-laminated wooden main beams
P. Hawryszków

Comparison of experimental and analytical data for a reinforced concrete chimney
A.K. Antonopoulos & C.A. Syrmakezis

Vibration monitoring of a grandstand in Dragon Stadium
H. Marques, A. Arêde & R. M. Delgado

Particularities of monitoring, identification, model updating hierarchy in experimental vibration analysis of structures
A. A. Kasimzade & S. Tuhta

Dynamic full-scale field test of steel cable-stayed bridge in Sieradz using computer vision method
P. Jakiel & P. Olaszek

The dynamic response and frequencies identification for a reinforced concrete slab in a storage building
M. Abdel-Rohman

Preliminary results on a stress wave based technique for pavement inspection
A. Marzani, C. Sangiorgi, A. Simone & F. Ubertini

Friday, 26 OCTOBER – MORNING

9:00-9:30 Keynote Lecture (Auditorium)

Chairs: C. Ventura, G. Feltrin

System and damage identification of a seven-story reinforced concrete building structure tested on the UCSD-NEES shake table
J.P. Conte, B. Moaveni, X. He & A.R. Barbosa

9:30-11:00 Plenary Session (Auditorium)

Chairs: J. Conte, W.-X. Ren

Dynamic investigations at offshore wind turbines
R.G. Rohrmann, W. Rücker & S. Bäumer

Wireless sensor network for bridge vibration monitoring – design and results
T. Uhl, K. Mendrok, P. Kurowski, A. Hanc, B. Peeters, E. Moya & H. Van der Auweraer

Monitoring based weak point determination of a steel bridge's torsional bracings with regard to fatigue threat
R. Veit-Egerer & H. Wenzel

Development of a monitoring system to Cabril dam with operational modal analysis
P. Mendes, C. Oliveira Costa, J. Almeida Garrett & S. Oliveira

Comparisons of measured natural frequencies and walking accelerations to design guide predictions
D.B. Davis & T.M. Murray

Vibration signatures to identify damage in historical constructions
L. Ramos, P. Lourenço, G. De Roeck, A. Campos-Costa

11:30-13:00 Parallel Session A (Room B032) **Topic 15**

Chairs: B. Peeters, W. Salvatore

Evaluation of dynamic effects and fatigue assessment of a metallic railway bridge
F. Marques, A. Cunha, A. A. Fernandes, E. Caetano & F. Magalhães

Condition assessment and retrofit of a historic steel-truss railway bridge
C.C. Spyrakos, I.G. Raftoyiannis & J.Ch. Ermopoulos

Experimental study of single span railway bridges
C. Rigueiro, C. Rebelo & L. Simões da Silva

Railway bridge dynamic characteristics from output only signal analysis
J. Wiberg

Standardized serviceability tests of railway bridges
J. Stampler, D. Janjic & C. Handel

Vibration measurement of steel & concrete bridges in Austria
M. Heiden

11:30-13:00 Parallel Session B (Room B029) **– Topics 10, 12**

Chairs: J. Bien, H. Takemiya

An evaluation of the nonlinear dynamic behavior of slender cellular phone towers under random wind excitation
A. Wahrhaftig & R. Brasil

Determination of external tendons' prestressing force using dynamic measurements
E. Penka & K. Zilch

Vibration response assessment of beam-and-block high-frequency floors under walking excitation
S. Živanović, A. Pavić & Z. Mišković

The physically interpretable and statistically proved forecast and evaluation of blast vibrations
B. Müller, J. Hausmann & H. Niedzwiedz

Bridge dynamic tests – Polish standards and practice
J. Bien, J. Zwolski & S. Adamcewicz

Use of random vibrations to measure stiffness of soils
J.A. Santos, J. Camacho-Tauta, M. Parodi, A. Viana da Fonseca & C. Ferreira

11:30-13:00 Parallel Session C (Room B035) **– Topic 12**

Chairs: P. Stroeven, W. Zabel

Output-only modal testing of a laboratory test footbridge
A. Brasiliano, H. M. B. Fernandes, H. H. F. Fernandes, R. L. Pimentel, G. N. Doz & J. L. V. Brito

Vibration analysis of floating pontoon structures in a wave tank
S. Uhlenbrock & G. Schlottmann

High cycling fatigue tests on tendons
B. Koeberl & J. Kollegger

Structural effects on meso- and micro-level of fiber concrete due to compaction by vibration
P. Stroeven, Z. Guo & M. Stroeven

Experimental analyses for the determination of lifetime expectancy of transmission line conductors
A.L. Rolim, L. A. C. M. Veloso, R. M. de Souza & J. P. da R. Neto

FRIDAY, 26 OCTOBER – AFTERNOON

14:30:-15:00 Keynote Lecture (Auditorium)

Chairs: C. Cremona, R. Rohrmann

Wireless sensor networks for long term monitoring of civil structures
G. Feltrin, J. Meyer & R. Bischoff

15:00-16:00 Plenary Session (Auditorium)

Chairs: J. Bien, B. Hoffmeister

Local dynamic vibration prediction of interaction between high-speed train and railway bridge
D. Su, J. Hernandez Jr., Y. Fujino, E. Ollinger & T. Miyashita

Updated models for steel-concrete composite HS railway bridges
G. Chellini & W. Salvatore

Structural assessment and performance prediction of a railway bridge
P. Moyo

Automated modal parameter estimation of civil engineering structures
P. Andersen, R. Brincker, M. Goursat & L. Mevel

16:30-17:30 Parallel Session A (Room B032)

Chairs: C. Magluta, P. Moyo

Seasonal changes of the dynamics of railway bridges with steel girders embedded in concrete
V. Zabel, M. Brehm & C. Bucher

Characterization of traffic and its effects on a short span railway bridge
R. Pimentel, R. Calçada & R. Delgado

Dynamic response of noise protection walls at high speed railway lines
B. Hoffmeister

Analytical modeling for the experimental analysis of traditional and innovative railway tracks
C. Onorii & G. Serino

16:30-17:15 Parallel Session B (Room B029) **– Topics 2, 14**

Chairs: R. Pimentel

Excitation of buildings and pedestrian structures from walking and running
C. Sahnaci & M. Kasperski

Numerical and experimental dynamic studies on historical masonry structures
M. L. Beconcini, G. Buratti, P. Croce, M. Mengozzi, P. Orsini & M. Luise

Influence of dynamic loading on reinforced concrete beams strengthened with CFRP lamella
P. Koteš & P. Kotula

16:30-17:15 Parallel Session C (Room B035) **– Topic 13**

Chairs: F. Paolacci, R. Carneiro de Barros

Shaking table tests of a base isolated steel liquid storage tank
R. Giannini & F. Paolacci

In-plane racking tests of building cladding elements
E. Uckan & E Safak

Experimental studies on reinforced concrete beam-column joints with hydraulic displacement amplification damping system
T. Chung, E. Lam, Y.-L. Xu & B. Wu

17:30 Closing Session (Auditorium)

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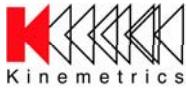
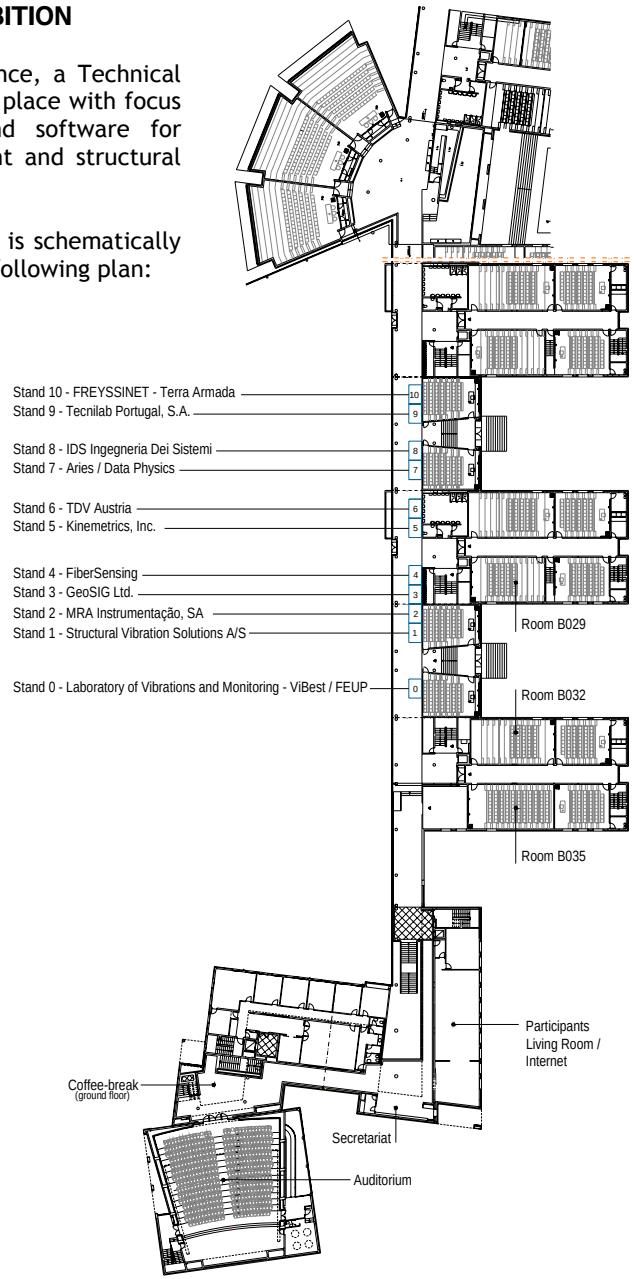


Other Supports

TECHNICAL EXHIBITION

During the conference, a Technical Exhibition will take place with focus on equipments and software for vibration assessment and structural monitoring.

The Exhibition area is schematically represented in the following plan:



EXHIBITORS

STAND 0
Laboratory of Vibrations and Monitoring – ViBest / FEUP

The Laboratory of Vibrations and Structural Monitoring (ViBest) is a facility / research unit of the Civil Engineering Department of FEUP that provides support to the performance of experimental and numerical works in the context of the development of research, consultancy and teaching activities in the field of Structural Dynamics, aiming in particular the experimental characterization of vibratory phenomena, the analysis, identification, monitoring and control of the structural behaviour under different types of dynamic loads.

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STAND 1
Structural Vibration Solutions A/S

Structural Vibration Solutions A/S is the developer of ARTeMIS *Extractor*, the leading software for Operational Modal Analysis (OMA) – The modal analysis software for the vast number of cases where it is preferred not to control or measure the loading. The software is used by mechanical engineers for modal analysis of operating machinery and components and by civil engineers for ambient modal analysis of large structures like bridges and buildings. The ARTeMIS modal software is an open, and user friendly platform for modal testing, modal analysis and modal problem solving. If you can measure the vibrations, ARTeMIS *Extractor* can give you the modes in terms of mode shape, natural frequency and damping ratio.

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Fax: +45 9635 4575
E-mail: info@svibs.com
www.svibs.com

STAND 2
MRA Instrumentação, SA

MRA Instrumentação, Alava Ingenieros, ALAVA Telecom and Preditec constitute the Group Alava Ingenieros, existing since 1973.
They represent more than 300 producers of equipment and software, aiming to make permanently available to professionals and researchers the best solutions existing all over the world.
The group has two main areas of activity:
- Solutions of instrumentation for measurement, recording, analysis and simulation of physical and electrical parameters;
- Solutions of audio recording for telecommunications and video for surveillance and security.
In these two areas, the group has available global solutions, which may include consultancy, conception, development, installation, instruction and post-selling services.

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STAND 3
GeoSIG Ltd.

Composed of highly dedicated and talented individuals with many years of experience in the seismic and civil engineering field, GeoSIG has developed a large variety of Strong Motion- and Seismic Recorders, Sensors and Civil Engineering Monitoring Systems and provides high quality instruments and systems. The principle tenet of GeoSIG is providing measuring solutions to customers' problems and meeting the customers' needs. This tenet is fulfilled by superior instruments and state-of-the-art systems in terms of features, functions, quality, reliability and price performance. The design and development of all GeoSIG systems are centred on obtaining the highest possible levels of performance, durability and reliability; qualities which are inherently associated with the words 'Swiss Made'.

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STAND 4
FiberSensing

FiberSensing supplies automated solutions for structural monitoring, ranging from sensor measurements to data analysis.
The company develops, sells and supports fiber optic based sensors and measurement units, and data management software.
The Fiber Bragg Grating Sensor technology allows the integration of the various sensors of a monitoring system under a unique interface, granting the customers a significant reduction of the complete monitoring costs.
The main markets are Construction, Aeronautic and Energy (Wind, Nuclear and Oil & Gas).
FiberSensing has a strategic partnership with Gavea Sensors for the joint development of new products and commercialization of the two companies product portfolio.

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FiberSensing

STAND 5
Kinemetrics, Inc.

Kinemetrics, Inc., with its corporate office in California, USA, and its European sales, services and repair office in Switzerland, is the world leader in the design, manufacture, and supply of earthquake and structural monitoring solutions and instrumentation. The company has been in business since 1969 and today, through state-of-the-art technology and as an ISO 9001:2000 Quality System certified company, Kinemetrics continues to provide the structural monitoring and earthquake observation communities with the highest-quality products for their monitoring challenges. Please visit our booth to see our latest solutions for the Experimental Vibration Analysis of Civil Engineering Structures.

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Kinemetrics

STAND 6
TDV Austria

TDV exists in Graz, Austria since 1970 with the main capabilities in programming, calculations and consulting services for static and dynamic analysis in structural engineering, road and railway design, water and gas supply and sewerage.

TDV team consists of a very favourable mixture of senior engineers and young ambitious project engineers. The company's close contact with institutions such as Graz University allows sophisticated research and development work.

Its bridge engineering **RM2006** software is at the cutting edge of software technology and except basic and extra modules offers also the software for rolling stock analyses, which includes all necessary functions to simulate the passing of a HSR train over a bridge.

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STAND 7
Aries / Data Physics

Aries Engineering is a Spanish company specialized in the area of vibration measurement and structural monitoring. We develop and integrate turnkey solutions with our own technology and the best equipment and software offering a complete service with high added value to our clients covering from the conception of the project to its commissioning and operation.
Aries' solutions cover from modal analysis software, high quality dynamic analysers to accelerometers.
Recently, we have designed and installed with success a seismic simulator attached to a table of 6 DOF at CEDEX (Ministry of Public Works in Spain).

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STAND 8
IDS Ingegneria Dei Sistemi

IDS produces two GPR technology system designed for the two phases of trenchless work:

- RIS is, an advanced series designed for detailed site characterization and mapping. It includes RIS MF (an MC-MF unit), RIS-S (an MC product).
- Detector DUO, a product envisioned as an on site aid and step ahead in real-time pipe location and site inspection technology.

The RIS family of products reflects the IDS operation philosophy that merges the use of multi-channel (MC), multi-frequency (MF) systems and specialized CAD integrated software products.
Detector Duo is designed with a new dual frequency antenna at 250MHz and 700 MHz for detecting shallow and deep metallic and non-metallic pipes with just one scan. No need to replace antennas and cover the same site twice.

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STAND 9
Tecnilab Portugal, S.A.

TECNILAB PORTUGAL is a company highly specialized in supplying laboratory equipments, providing instruction and assistance. For this purpose, TECNILAB PORTUGAL represents some of the most prestigious producers of equipment available all over the world. Its activity during about 30 years and the expertise of its technical staff are the best warranty of permanent support provided to the clients. Some of TECNILAB products will certainly satisfy your needs.

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STAND 10
FREYSSINET – Terra Armada

The Freyssinet Group brings together a range of expertise unequalled in the specialist civil engineering.
The Group delivers high value added solutions in two major fields: structures and soils. Civil engineering structures, high-rise buildings, industrial sites, platforms, transport infrastructure, etc. The Group is involved in construction, refurbishment and stabilisation of all types of building and civil engineering works.
The Freyssinet group has been involved over the past 70 years in significant projects on five continents. Today it is a group of companies each international benchmark in their specialised field:

- Freyssinet, a world leader in prestressing, stay cables and strengthening of structures;
- Reinforced Earth, a world leader in MSE (Mechanically Stabilised Earth) walls;
- Menard, soil improvement specialists.

Increasingly involved in sustainable development issues, the Freyssinet Group is stepping up initiatives, to improve environmental protection on construction sites as well as strengthen its policy on social responsibility. Putting people at the core of the organisation, the Freyssinet Group has thus been committed to active steps towards risk prevention and safety for several years. Freyssinet is a subsidiary of VINCI Construction, the market leader in France and a major player worldwide in construction and civil engineering.

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Sustainable Technology