38th International Congress and Exposition on Noise Control Engineering 2009

(INTER-NOISE 2009)

Ottawa, Canada
23-26 August 2009

Volume 1 of 7

Editors:

J. Stuart Bolton
Courtney Burroughs

Brad Gover

ISBN: 978-1-61567-690-3
TABLE OF CONTENTS

VOLUME 1

PLENARY SESSION

IN09_359 NOISE INDUCED SLEEP DISTURBANCES AND AFTER-EFFECTS ON PERFORMANCE, WELL-BEING AND HEALTH ................................................................. 1
Barbara Griefahn, Mathias Basner

KEYNOTE

IN09_743 BUILDING IMPACT SOUND SOURCES AND RATINGS .............................................................................................................................. 15
Jin Yong Jeon

SPEECH PRIVACY

IN09_783 SPEECH PRIVACY IN JAPAN, RELEVANT FEELING, EVALUATION AND ENHANCEMENT ..................................................... 29
Yasushi Shimizu, Mai Fujiwara
IN09_321 VOCAL EFFORT LEVEL DISTRIBUTION IN SPEECH INTELLIGIBILITY AND PRIVACY ASSESSMENT -THE KNOWLEDGEBASE AND NECESSARY FURTHER WORK .................................................. 34
Francis P. Li
IN09_692 SELF ASSESSMENT OF SPEECH INTELLIGIBILITY LISTENING TO BINAURAL RECORDINGS ........................................... 43
Roger Johnson, Johan Oldelius, Arne Nykänen
IN09_750 EFFECT OF ROOM ACOUSTIC CONDITIONS ON MASKING EFFICIENCY ........................................................................... 52
Hyojin Lee, Kanako Ueno, Shinichiro Sakamoto, Mai Fujiwara, Yasushi Shimizu, Masato Hata
IN09_786 EXPERIMENTAL STUDY FOR SPEECH PRIVACY WITH A SOUND MASKING SYSTEM IN MEDICAL EXAMINATION ROOM ........................................................................................................ 61
Mai Fujiwara, Yasushi Shimizu, Masato Hata, Hyojin Lee, Kanako Ueno, Shinichiro Sakamoto
IN09_278 SPEECH PRIVACY: THE 2009-10 LEED, AIA & ASHE CRITERIA FOR HEALTHCARE FACILITIES ............................................................................. 70
David Sykes, William Cavanaugh, Gregory Tocci
IN09_432 THE EFFECT OF ROOM ACOUSTICS ON THE MEASURED SPEECH PRIVACY IN TWO TYPICAL EUROPEAN OPEN PLAN OFFICES ............................................................................................................. 74
Remy H. C. Wemmers, Nicole H. A. M. Van Hout, Constant C. J. M. Hak, L. C. J. Van Luxemburg
IN09_229 USING SPMSOFT TO ASSESS PRIVACY IN OPEN-PLAN OFFICES ....................................................................................... 80
John Bradley
IN09_329 ARCHITECTURAL AND ACOUSTIC DESIGN FOR SPEECH PRIVACY ........................................................................ 89
Kenneth P. Roy
IN09_220 ACHIEVING SPEECH PRIVACY WITH REASONABLE SOUND INSULATION AND MASKING BACKGROUND NOISE .......................................................... 94
Jukka Keränen, Valtteri Hongisto
IN09_295 LOOKING AT SPEECH PRIVACY IN BUILDINGS: A FEW CONSIDERATIONS ........................................................................ 101
Marc A. Basileseaulo, Moud Serra, Alina Gaulupneu
IN09_191 COMPARISONS OF SPEECH PRIVACY MEASURES .......................................................................................................................... 107
John Bradley
IN09_171 SPEECH PRIVACY CLASS (SPC) MEASUREMENTS IN REAL OFFICE BUILDINGS PER ASTM E-2638 STANDARD AND RELATED STC VALUES ............................................................... 116
Claude Fortier

GREEN/SUSTAINABLE QUIET BUILDING DESIGN

IN09_616 ACOUSTICS AND LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN: CURRENT STATUS AND FUTURE DIRECTIONS ........................................................................................................ 126
Jeanette Hesedahl, Daniel Bruck
IN09_780 ACOUSTICAL CHALLENGES POSED BY SUSTAINABLE BUILDING DESIGN ........................................................................................................ 131
Gregory A. Coudriet
IN09_562 EXPERIMENTAL STUDY OF THE SOUND INSULATION OF SEMI-EXTENSIVE GREEN ROOFS ..................................................... 137
Jian Kang, Huahua Huang, Jeff Sorrill
IN09_778 NOISE REDUCTION OF A DOUBLE SLIDING WINDOW IN RELATION WITH OPENING CONFIGURATION ............................................................................. 144
Jean-Philippe Mignaron
IN09_920 ACOUSTICAL IMPROVEMENTS WITH NATURAL AIR VENTILATIONS IN THE LIU INSTITUTE AT THE UNIVERSITY OF BRITISH COLUMBIA ........................................................................................................ 152
Zohreh Razavi
IN09_939 LEED FOR SCHOOLS - HVAC MECHANICAL SYSTEMS NOISE CONTROL - METHODS, TOOLS AND THE FUTURE ................................................................. 161

Joseph F. Bridger, Mathew M. George

MIXED USE ACOUSTICAL ENVIRONMENTS

IN09_615 A CASE STUDY; SOUND CONTROL IN A LIVE MUSIC/RESIDENTIAL ADJACENCY .......................................................... 167
Jeanette Hesedahl, Daniel Bruck
IN09_969 AN HISTORIC CONVERSION: FROM A BANK TO A RESTAURANT AND RESIDENCES ............................................. 172
Jeffrey Fullerton, Benjamin Markham, Ioana Pieleanu
IN09_808 DEVELOPMENT OF A NOISE AND VIBRATION LABORATORY WHICH INCLUDES HEAVY TRUCK DYNAMOMETER TESTING ................................................................. 181
Randy Rozema, Steve Sorenson, Michael Dinsmore

LIGHTWEIGHT CONSTRUCTIONS

IN09_266 DESIGN OF LIGHT WEIGHT CONSTRUCTIONS - RISKS AND OPPORTUNITIES .................................................. 190
Klas Hagberg, Tommy Persson, Matsilda Höök
IN09_317 ACHIEVING ACOUSTICAL CODE REQUIREMENTS IN LIGHTWEIGHT MULTI-FAMILY DWELLINGS ................................................ 199
Jeffrey Babich
IN09_714 OBJECTIVE AND SUBJECTIVE QUALIFICATION OF ACOUSTICAL AND THERMAL COMFORT IN TIMBER FRAMED HOUSES ........................................................................... 207
Sylvain Boulet, Gilbert Achard, Jean-Luc Kouyoumjian
IN09_208 VIBRATION OF CONCRETE HOLLOW CORE ELEMENTS INDUCED BY HUMAN WALKING .................................................. 216
Delphine Bard, Pia Johannsson, Kent Persson, Sven Theandersson
IN09_345 PREDICTION OF THE ACOUSTIC PERFORMANCE OF FLOOR COVERINGS ON LIGHTWEIGHT FLOORS.......................... 225
Catherine Guigou-Carter, Remy Forer, Jean-Baptiste Chene, Michel Villot
IN09_369 SOUND INSULATION OF WOOD-BASED FLOOR SYSTEMS WITH INNOVATIVE WOOD TOPPINGS ........................................ 234
Fredrik Ljunggren, Anders Ågren
IN09_876 CREMER’S PARALLEL PLATES APPLIED TO LIGHTWEIGHT CONSTRUCTION .................................................. 243
Berndt Zeitler, Trevor Nightingale, Stefan Schoenwald
IN09_653 USING ELASTIC LAYERS TO IMPROVE SOUND INSULATION IN VOLUME BASED MULTI-STORY LIGHTWEIGHT BUILDINGS .................................................................................. 252
Fredrik Ljunggren, Anders Ågren
IN09_723 SOUND TRANSMISSION LOSS OF CROSS LAMINATED TIMBER ‘CLT’ FLOORS, MEASUREMENTS AND MODELLING USING SEA .......................................................... 258
Kouyoumjian Jean-Luc, Sylvain Gagnon, Sylvain Boulet
IN09_925 A HIERARCHY OF FLANKING TRANSMISSION PATHS IN LIGHT-WEIGHT WOOD FRAME CONSTRUCTION ........................................ 266
Trevor Nightingale, Berndt Zeitler, Stefan Schoenwald, Frances King
IN09_856 PREDICTION OF FLANKING SOUND TRANSMISSION IN LIGHTWEIGHT BUILDING STRUCTURES WITH SEA - CONCLUSIONS FOR A STANDARDIZED PREDICTION MODEL ................................................................ 275
Stefan Schoenwald
IN09_182 MODAL DENSITY AND MODAL DISTRIBUTION IN A RIBBED PLATE ................................................................. 285
Jonas Brunsborg, Kristoffer Dickow, Mogens Ohlrich
IN09_211 THE PROPAGATED UNCERTAINTY OF EN12354-1 FOR LIGHTWEIGHT BUILDING CONSTRUCTIONS .................................................................................. 294
Jeffrey Mahn, John Pearson
IN09_035 STRUCTURAL VIBRATIONS AND ATTENUATION IN LIGHTWEIGHT STRUCTURES .................................................. 302
Lars-Göran Sjökvist, Jonas Brunsborg
IN09_458 PREDICTING SOUND INSULATION IN WOOD FRAME LIGHTWEIGHT BUILDINGS .................................................. 310
Michel Villot, Catherine Guigou-Carter
IN09_655 VARIATIONS IN SOUND INSULATION IN MULTI-STORY LIGHTWEIGHT TIMBER CONSTRUCTIONS .................................................. 315
Rikard Ökvist, Fredrik Ljunggren, Anders Ågren

KEYNOTE

IN09_246 EMISSION, PROPAGATION AND CONTROL OF ROAD TRAFFIC NOISE: SOME SOLUTIONS FOR THE FUTURE................................. 324
Michel Berengier
SPEECH COMMUNICATION IN ROAD VEHICLES

IN09_764 AUDITORY FACTORS INFLUENCING HUMAN SPEECH PERCEPTION IN AUTOMOBILES ................................................. 333
Margaret Cheesman, Mary Beth Jennings

IN09_761 TOWARDS RELIABLE ARTICULATION EVALUATION INSIDE AUTOMOBILES USING BINAURAL MANNEQUINS ........................................... 338
Masanori Miura, Fukazawa Yuki, Kazuhiro Kondo, Hideharu Isaka

IN09_257 SPEECH ESTIMATION USING BODY-CONDUCTED SPEECH MICROPHONE IN NOISY ENVIRONMENT ................................................................. 345
Masashi Nakayama, Shunsuke Ishimitsu, Seiji Nakagawa

TIRE/PAVEMENT NOISE

IN09_224 NEW VEHICLE NOISE EMISSION FOR FRENCH TRAFFIC NOISE PREDICTION ................................................. 350
Joel Lelong, Emmanuel Le Duc, Sonia Daisy

IN09_414 LOW NOISE PAVEMENTS IN A NORDIC CLIMATE. RESULTS FROM A FOUR YEAR PROJECT IN NORWAY ........................................... 359
Truls Berge, Steinv. A. Storeheier

IN09_043 RECENT AUSTRALIAN INVESTIGATIONS INTO THE ACOUSTIC ATTRIBUTES OF ROAD PAVEMENT SURFACES ........................................... 368
Stephen Samuels, Arthur Itali, Jeffrey Parnell

IN09_748 TIRE/PAVEMENT NOISE OF TEST TRACK SURFACES DESIGNED TO REPLICATE CALIFORNIA HIGHWAYS ........................................... 380
Paul Donavan, Dana Lodico

IN09_477 ACOUSTIC IMPROVEMENT OF GUASSPHALT (MASTIC ASPHALT) PAVEMENTS ........................................... 392
Oliver Ripke

IN09_674 PREDICTION OF TIRE/ROAD NOISE REDUCTION BY ROAD-SURFACE IMPROVEMENTS ........................................... 399
Tatsuo Fujikawa, Yutaka Oohno, Hideki Tachibana

IN09_777 PREDICTING TIRE-PAVEMENT NOISE ON LONGITUDINALLY GROUND PAVEMENTS USING A NONLINEAR MODEL ........................................... 405
Tyler Dare, Robert Bernhard

IN09_849 NEW APPROACH FOR MODELLING TYRE/ROAD NOISE ........................................... 416
Mingliang Li, Win Van Keulen, André Molenaar, Rien Huurman, Martin Van De Ven

IN09_591 THE COMPOSITE WHEEL -- FEATURING LOW TYRE/ROAD NOISE AND LOW ROLLING RESISTANCE SIMULTANEOUSLY ........................................... 423
Ulf Sandberg

TIRE/PAVEMENT NOISE – MEASUREMENT METHODS AND EQUIPMENT

IN09_388 DEVELOPING U.S. WAYSIDE METHODS FOR MEASURING THE INFLUENCE OF ROAD SURFACES ON TRAFFIC NOISE ........................................... 433
Judith Rochat

IN09_389 INVESTIGATION OF TEMPERATURE CORRECTION FOR WAYSIDE TIRE/PAVEMENT NOISE MEASUREMENTS ........................................... 440
Judith Rochat

IN09_847 DUCT ARRAY SYSTEM FOR MEASURING TRAFFIC NOISE UNDER UNFAVOURABLE CONDITIONS ........................................... 447
Robert Rasmussen, Paul Donavan, Bruce Rymer, Robert Whirledge

IN09_818 MODELING SOURCE AND WAYSIDE SOUND LEVELS AS AFFECTED BY PAVEMENT AND BRIDGE JOINT IMPULSE NOISE ........................................... 453
Robert Rasmussen, Paul Donavan, Bruce Rymer, Robert Whirledge

IN09_224 THE SELECTION OF NEW REFERENCE TEST TYRES FOR USE WITH THE CPX METHOD, TO BE SPECIFIED IN ISO/TS 11819-3 ........................................... 462
Phil Morgan, Ulf Sandberg, Gijssen Van Blokland, Wout Schwanen

IN09_036 MEASUREMENT OF PAVEMENT ABSORPTION OF PASS-BY TRACKS BASED ON ISO 13472-2 ........................................... 471
A. F. Seybert, Ferdy Martinus

CASE STUDIES IN COMMUNITY NOISE

IN09_193 COMMUNITY NOISE IN THE UNITED ARAB EMIRATES ........................................... 477
Truls Gjestland, Yahya Al-Rayyes

IN09_264 SOCIAL SURVEY ON COMMUNITY RESPONSE TO AIRCRAFT NOISE IN HO CHI MINH CITY ........................................... 482
Takashi Yano, Thu Lan Nguyen, Tsuyoshi Oshino, Tetsumi Sato

IN09_977 ESTABLISHING PRIORITIES FOR GROUND TRANSPORT NOISE IN END ACTION PLANS ........................................... 491
Jean-Pierre Clairborne, Peter Houtave, Vincent Trofels

IN09_183 THE EFFECTS OF BEHIND START OF TAKE-OFF ROLL MODELING IN INM AND AEDT; A CASE STUDY ........................................... 498
Eric Boeker
EFFECTS OF NOISE ON COMMUNITIES

IN09.160 NON-RESPONSIVENESS OF CONVENTIONAL MEASURES OF ROAD TRAFFIC NOISE TO AN URBAN TRUCK RESTRICTION STRATEGY
A. L. Brown, Deanna Tamerini, Joseph Carroll, Norman Scott

IN09.971 EFFECT OF COMBINED NOISE SOURCES ON SPEECH INTELLIGIBILITY IN URBAN SPACES
Pyeung Jik Lee, Jin Yong Jeon

IN09.560 DISTRIBUTION OF SPEECH TRANSMISSION INDEX IN CLASSROOMS WITH VARIED SIGNAL TO NOISE RATIOS CAUSED BY AIRCRAFT NOISE
Nurgun Tamer Bayazit, Bilge San, Selada Kose

IN09.912 ASSESSING COMMUNITY ANNOYANCE TO TRAFFIC NOISE IN RESIDENTIAL-INDUSTRIAL MIXED DISTRICTS IN THE CITY OF SHARJAH, UAE
Hussein Elmekhal, Omar Adwan

IN09.858 AN EXAMINATION OF THE INFLUENCE OF ROUGHNESS AND LOUDNESS ON ANNOYANCE RATINGS OF AIRCRAFT NOISE
Shashank More, Patricia Davies

IN09.559 ASSESSMENT OF NOISE ANNOYANCE IN SCHOOLS DUE TO AIRCRAFT NOISE
Nurgun Tamer Bayazit, Bilge San, Selada Kose, Suat Bicer, Ahmet Buyukgoz, D. Celik Boyze, Nizamettin Mangir, Mevlut A. Saglam, Onur Taskinoglu

IN09.792 STUDY ON THE QUANTITATIVE ASSESSMENT MODEL IN THE AREA EXPOSED BY THE COMBINED NOISE DUE TO ROAD TRAFFIC AND RAILWAY
Joon Hee Ko, Seo Il Chang, Kyung Min Kim

SOUNDSCAPES

IN09.426 DEVELOPMENT OF A SOUNDSCAPE SIMULATOR TOOL
Neil Bruce, William Davie, Mags Adams

IN09.857 SOUNDSCAPES: AN URBAN PLANNING PROCESS MAP
Mags Adams, Bill Davies, Neil Bruce

IN09.716 CLASSIFICATION OF SOUNDSCAPES USING A NOVEL MOBILE AND INTERNET METHODOLOGY
Charlie Mydlarz, Ian Drumm, Trevor J Cox

IN09.950 THE SIGNIFICANCE OF PARTICIPATION AND INITIATIVE OF LOCAL RESIDENTS IN THE SOUNDSCAPE DESIGN
Atsushi Nishimura, Kozo Hiramatsu

IN09.379 THE POSITIVE SOUNDSCAPE PROJECT: A SYNTHESIS OF RESULTS FROM MANY DISCIPLINES
William Davie, Mags Adams, Neil Bruce, Melissa Marselle, Rebecca Cain, Paul Jennings, Deborah Hall, Amy Irwin, Ken Hume, Chris Plack

IN09.459 THE ROLE OF SALIENCY, ATTENTION AND SOURCE IDENTIFICATION IN SOUNDSCAPE RESEARCH
Dick Botteldooren, Bert De Coensel
VOLUME 2

IN09_885 A FRAMEWORK FOR ASSESSING THE CHANGE IN PERCEPTION OF A PUBLIC SPACE THROUGH ITS SOUNDSCAPE ...................................................726
Paul Jennings, Rebecca Cain, Angus Carlyle, Peter Cusack, Mags Adams, Neil Bruce, Bill Davies, Ken Hume, Chris Plack

IN09_905 EMOTIONAL DIMENSIONS OF A SOUNDSCAPE ........................................734
Rebecca Cain, Paul Jennings, John Paxson, Alec Scott

IN09_906 CREATION AND USE OF A SIMPLE METHOD FOR DISPLAYING AND ANALYZING SOUNDSCAPES RECORDINGS ........................................742
John Paxson, Paul Jennings, Rebecca Cain

PREDICTING AND MEASURING AMBIENT SOUND

IN09_812 ANALYSIS OF AMBIENT DATA MEASURED IN THE NATIONAL PARKS UNDER HIGH-WIND CONDITIONS ..........................................................................................................................751
Amanda Rapoza, Cynthia Lee, John Macdonald

IN09_747 MEASUREMENT AND ANALYSIS OF WIND-INDUCED BACKGROUND NOISE LEVELS FOR WIND TURBINE GENERATOR IMPACT ASSESSMENT ........................................760
Paul Donavan

IN09_584 WIND-INDUCED PSEUDO-NOISE AND LEAF-RATTLE NOISE ..........................................................770
Paul Schomer, Geoffrey Beck

IN09_203 MEASURING AMBIENT SOUND LEVELS IN QUIET ENVIRONMENTS ..................................................790
George Hessler

IN09_973 MEASURING BACKGROUND NOISE WITH AN ATTENDED, MOBILE SURVEY DURING NIGHTS WITH STABLE ATMOSPHERIC CONDITIONS ....................................................799
Clifford Schneider

IN09_583 THE DIFFERENCE BETWEEN DAY-NIGHT AVERAGE SOUND LEVEL AND THE EUROPEAN UNION DAY-EVENING-NIGHT AVERAGE SOUND LEVEL FOR A TYPICAL SAMPLE OF 100 HOUSING SITES .................................................................811
Paul Schomer, Cheng Luo, Anne Machesky

IN09_525 ON THE NATURE OF THE AMBIENT SOUND ................................................................................826
Gary Siebein, Robert Lilkendey, Reece Shelton, Hyun Paek

AIRCRAFT NOISE SOURCE CHARACTERIZATION

IN09_563 SHUNT LOUDSPEAKER TECHNIQUES FOR USE AS LINERS FOR ENGINE NACELLES ........................834
Hervé Lisick

IN09_346 NUMERICAL OPTIMISATION OF LINERS FOR THE AERO-ENGINE INTAKE OF A SUPERSONIC AIRCRAFT .............................................................................................................................................842
Patrice Malbèqui, Luc Bourrat

IN09_254 DISTRIBUTED SYSTEM FOR EXTENDED FIELD MEASUREMENTS OF SONIC BOOMS ..........................................................850
Kurt Veggeberg

IN09_928 DEVELOPMENT OF A NEAR-FIELD ACOUSTICAL HOLOGRAPHY SYSTEM FOR AIRCRAFT JET SOURCE NOISE MEASUREMENTS ..................................................................................857
Michael James, Kent Gee, Micah Downing

IN09_938 NEAR-FIELD ACOUSTICAL HOLOGRAPHY OF MILITARY JETS: EXPERIMENTS ON PARTIALLY CORRELATED NOISE SOURCES ..................................................................................................................866
Michael D. Gardner, Kent L. Gee, Alan T. Wall, Scott D. Sommerfeldt, Daniel Manswill, Jonathan D. Blotter

IN09_286 ON THE POSSIBLE ROLE OF SHORT-RANGE SHOCK FORMATION AND COALESCENCE IN JET AEROACOUSTIC SOURCE CHARACTERIZATION ..................................................................................875
Micah R. Shepherd, Kent L. Gee

IN09_006 TORSIONAL VIBRATION ANALYSIS OF TRANSMISSION SYSTEM ON A LIGHT COMMERCIAL HELICOPTER ..................................................................................................................882
H. Temel Belek, Ufuk Uzundag
# RAILWAY NOISE AND VIBRATION

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN09_101</td>
<td>PREDICTION MODEL OF RAILWAY NOISE AT HIGH-RISE BUILDINGS</td>
<td>Koichi Nagahara, Yu kako Abe, Toshiki Kitagawa, Yukio Ogata</td>
</tr>
<tr>
<td>IN09_064</td>
<td>WAYSIDE NOISE REDUCTION TECHNIQUES FOR THE TOKAIDO SHINKansen</td>
<td>Gen Kitahara, Kazuhiro Kato</td>
</tr>
<tr>
<td>IN09_639</td>
<td>TRAIN INTERIOR NOISE OF UNDERGROUND RAILWAY IN DIFFERENT CROSS-SECTIONS OF TUNNEL</td>
<td>Shimokura Ryota, Soetsu Yoshisharuu</td>
</tr>
<tr>
<td>IN09_863</td>
<td>SOME CONSIDERATIONS ABOUT THE GROUND VIBRATION CAUSED BY MONORAIL TRAFFIC</td>
<td>John Manning, Raymond Panneton</td>
</tr>
<tr>
<td>IN09_725</td>
<td>DEVELOPMENT OF PASSIVE AND ACTIVE NOISE CONTROL FOR NEXT GENERATION Locomotive Cabs</td>
<td>Timothy Johnson, Carl Hanson, Jason Ross, Abdullatif Zaatuk</td>
</tr>
<tr>
<td>IN09_914</td>
<td>THE PSYCHOLOGICAL, PHYSIOLOGICAL, AND REGULATORY VALUE OF COMMERCIAL ACTIVE NOISE REDUCTION IN Locomotive Cabs</td>
<td>James Tuman Nelson</td>
</tr>
<tr>
<td>IN09_708</td>
<td>PREDICTION OF RAIL TRANSIT GROUND VIBRATION WITH SHEAR-WAVE VELOCITY PROFILES</td>
<td>Seigo Ogata, Hideki Tsuura, Yasuhiro Sato</td>
</tr>
<tr>
<td>IN09_134</td>
<td>NUMERICAL CONSIDERATION ON STRUCTURE-BORNE SOUND FOR RAILWAY-NOISE REDUCTION</td>
<td>Motoki Yairi, Kenichi Takebayashi, Kimhiro Sakagami, Masayuki Morimoto</td>
</tr>
<tr>
<td>IN09_955</td>
<td>PREDICTING GROUND-BORNE TRAIN VIBRATION USING VIBRATION PROPAGATION TESTING I: PROCEDURES FOR OBTAINING VALID DATA UNDER UNFAVORABLE FIELD CONDITIONS</td>
<td>Shankar Rajaram, Andrew Somerville</td>
</tr>
<tr>
<td>IN09_954</td>
<td>PREDICTING GROUND-BORNE TRAIN VIBRATION USING VIBRATION PROPAGATION TESTING II: EFFECTS OF BACKGROUND VIBRATION ON MEASURED TRANSFER MOBILITY</td>
<td>Shankar Rajaram, Andrew Somerville</td>
</tr>
</tbody>
</table>

## MICROPERFORATED MATERIALS FOR NOISE CONTROL

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN09_267</td>
<td>SOUND ABSORPTION CHARACTERISTICS OF A HONEYCOMB-BACKED MICROPERFORATED PANEL ABSORBER: REVISED THEORY AND EXPERIMENTAL VALIDATION</td>
<td>Masahiro Toyoda, Mui Rui Lin, Daiji Takahashi</td>
</tr>
<tr>
<td>IN09_063</td>
<td>ABSORPTION CHARACTERISTICS OF MICROPERFORATED PANELS: TRANSITION FROM PANELTYPE ABSORPTION TO ACOUSTICAL TRANSPARENCY</td>
<td>Kang Hou, J Stuart Bolton</td>
</tr>
<tr>
<td>IN09_499</td>
<td>FINITE ELEMENT MODELS FOR MICRO-PERFORATED PANELS</td>
<td>Li Cheng, Chuanzi Wang, Jie Pan</td>
</tr>
<tr>
<td>IN09_341</td>
<td>WIDEBAND SOUND ABSORBER OBTAINED BY COMBINATION OF TWO MICROPERFORATED PANEL ABSORBERS WITH DIFFERENT AIR-CAVITY DEPTHS ARRANGED IN PARALLEL.</td>
<td>Motoki Yairi, Kenichi Takebayashi, Kimiihiro Sakagami, Masayuki Morimoto</td>
</tr>
<tr>
<td>IN09_301</td>
<td>OPTIMIZATION OF MULTIPLE LAYER MICROPERFORATED PANELS BY SIMULATED ANNEALING</td>
<td>Estelle Piot, Francis Michels, Frank Simon</td>
</tr>
<tr>
<td>IN09_300</td>
<td>LDA INVESTIGATION OF MULTIPLE LAYER MICROPERFORATED PANELS BY SIMULATED ANNEALING WITH GRAZING AND BIAS FLOW</td>
<td>Aijosa Rakic, Celse-Kajuf Amedon, Noureddine Atalla, Raymond Panneton</td>
</tr>
</tbody>
</table>

## MATERIALS FOR AUTOMOBILE INTERIORS

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN09_276</td>
<td>ESTABLISHING RELATIONSHIPS BETWEEN ACOUSTIC AND PHYSICAL PROPERTIES OF SHODDY-BASED FIBRE ABSORBERS FOR ACOUSTIC MODELLING</td>
<td>John Manning, Raymond Panneton</td>
</tr>
<tr>
<td>IN09_823</td>
<td>SOUND TRANSMISSION LOSS EVALUATION OF TRIM PANEL SAMPLES BY SURFACE IMPEDANCE MEASUREMENTS</td>
<td>Raymond Panneton</td>
</tr>
</tbody>
</table>
### DIESEL ENGINE CONDITION MONITORING

- **IN09_214** A COMPARISON OF TWO AND FOUR MICROPHONE STANDING WAVE TUBE PROCEDURES FOR ESTIMATING THE NORMAL INCIDENCE ABSORPTION COEFFICIENT
  - Markus Auerbach, Andreas Bockstedte, Otto Von Estorff, Olgierd Zaleski
  - Page: 1057

- **IN09_826** TESTING APPROACH AND TRADEOFFS IN APPLYING NOISE CONTROL MATERIALS TO INTERIORS OF CLASS 8 TRUCKS AND AUTOMOBILES
  - Steven Sorensen, Steven Jorro
  - Page: 1066

- **IN09_002** RAPID OPTIMIZING OF NOISE INSULATION ON CLASS 8 CAB USING SOUND INTENSITY TRANSFER FUNCTIONS
  - James Kanto, Tian-Wook Yoo, Stuart Bolton, Kang Hou, Jan Eesk
  - Page: 1075

- **IN09_285** PASSIVE REDUCTION OF NOISE IN AN AUTOMOTIVE COMPARTMENT; EFFECT OF ENGINE BAY AND PARTITIONS
  - Mariana Kruntcheva
  - Page: 1084

### HELMHOLTZ RESONATORS

- **IN09_449** NUMERICAL AND EXPERIMENTAL INVESTIGATIONS OF NOISE BARRIERS WITH INTERFERENCE
  - Page: 1168

### DESIGN OF AN INNOVATIVE SCREEN TOP BASED ON DESTRUCTIVE SOUND NOISE BARRIERS AND ASSOCIATED DEVICES: MODELING, DESIGN AND PERFORMANCE

- **IN09_145** DESIGN OF AN INNOVATIVE SCREEN TOP BASED ON DESTRUCTIVE SOUND INTERFERENCE
  - Marius M. Boone
  - Page: 1227

- **IN09_476** IDENTIFICATION OF DYNAMIC PROPERTIES OF LINEARLY VISCOELASTIC MATERIALS USING VIBRATING BEAM TECHNIQUE AND OPTIMIZATION
  - Zenzo Yamaguchi, J. Stuart Bolton
  - Page: 1110

### VIBRO-AcouSTICS AND VIBRATIONS

- **IN09_765** STRUCTURE-BORNE NOISE REDUCTION OF PLATE USING BEADS
  - Jong-Won Lee, Ji-Hyun Yoon, Jae-Eun Jeong, Jae-Eung Oh, Jung-Yoon Lee
  - Page: 1134

- **IN09_292** REDUCTION OF SOUND RADIATION USING EXTENDED RADIATION MODES
  - Stephen Conlon, Stephen Hambric
  - Page: 1110

- **IN09_181** STUDY ON ACOUSTIC CHARACTERISTICS OF STRAIGHT DUCT WITH SOME HOLES
  - Kunishiko Ishihara
  - Page: 1144

### PASSIVE TECHNIQUES IN VIBRATION AND NOISE CONTROL

- **IN09_053** SENSITIVITY STUDY ON MODELLING THE EFFECTIVE LENGTH OF A HELMHOLTZ RESONATOR COUPLED WITH CYLINDER
  - Darziac Nowak, Valter Bellucci, Fulvio Magni
  - Page: 1093

- **IN09_785** USE OF RESONATORS FOR PRACTICAL PASSIVE NOISE REDUCTION
  - Jorge P. Arenas, Sebastián Acevedo
  - Page: 1102

- **IN09_746** USE OF RESONATORS FOR PRACTICAL PASSIVE NOISE REDUCTION
  - Zenzo Yamaguchi, J. Stuart Bolton
  - Page: 1116

- **IN09_476** STRUCTURE-BORNE NOISE REDUCTION OF PLATE USING BEADS
  - Jong-Won Lee, Ji-Hyun Yoon, Jae-Eun Jeong, Jae-Eung Oh, Jung-Yoon Lee
  - Page: 1134

- **IN09_294** AUTOREGRESSIVE SPECTRUM ANALYSIS OF CYLINDER HEAD VIBRATION AND MARINE DIESEL ENGINE CONDITION MONITORING
  - Jianyuan Zhu
  - Page: 1168

### VIBROACOUSTICS AND VIBRATIONS

- **IN09_804** DEVELOPMENT OF MEDIUM DUTY TRUCK WITH ENGINE MOUNT SYSTEM BY AIR SPRING
  - Tetsuya Sakai, Masashi Daimaruya, Jianming Shi, Masao Nagamatsu, Isao Yamazaki, Masaki Atzu, Kazunori Atzu, Mitsuo Iwahara, Akio Yamazaki, Mitsuo Yajima
  - Page: 1153

- **IN09_746** THE NOISE REDUCTION EFFECT OF THE LINING SYSTEM IN THE CABIN OF SHIPS
  - Hyun-Ju Kang, Jae-Seung Kim, Hyeon-Sil Kim, Sung-Ryul Kim, No-Sung Kim, Sun-I Cha
  - Page: 1164

- **IN09_294** AUTO REGRESSIVE SPECTRUM ANALYSIS OF CYLINDER HEAD VIBRATION AND MARINE DIESEL ENGINE CONDITION MONITORING
  - Jianyuan Zhu
  - Page: 1168

- **IN09_151** ACOUSTICALLY AND FLOW INDUCED VIBRATION IN PROCESS PIPING SYSTEMS – AN OVERVIEW FROM THE ENGINEERING CONTRACTOR’S PERSPECTIVE
  - James Cowling
  - Page: 1176

- **IN09_152** ANALYSIS OF FLOW-INDUCED VIBRATION IN PROCESS PIPING
  - Poornima Ayyappan, Sathi Nathaniel, Prashanth Patil, Mahmood Tijani, Hieu Tran
  - Page: 1184

- **IN09_734** VIBRO-AcouSTICAL DYNAMICS IN A CONFINED BUBBLY LIQUID BY A MODAL APPROACH
  - Vincent Debut, Jose Antunes
  - Page: 1192

- **IN09_199** MEASUREMENTS OF THE POWER FLOW BETWEEN BOLTED HONEYCOMB SANDWICH PANELS
  - Stephen Hambric, Stephen Conlon, Ben Grisso, Micah Shepherd
  - Page: 1201

- **IN09_231** EVALUATION OF A HARD WALLED ROOM FOR REVERBERANT POWER MEASUREMENTS: WHAT IS “GOOD ENOUGH”? (1)
  - Stephen Conlon, Stephen Hambric
  - Page: 1210
<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN09_435</td>
<td>NOISE BARRIERS WITH DIFFRACTION-REDUCING DEVICES ON TOP EDGE:</td>
<td>Tomonao Okubo, Yoshio Matsumoto, Kohei Tamamto, Osamu Funahashi, Takashi Okura, Kuntio Nakassaki, Minoru Yamamoto</td>
</tr>
<tr>
<td></td>
<td>PROPAGATION PREDICTION APPLYING INTRINSIC EFFICIENCIES DETERMINED BY IMPULSE-RESPONSE MEASUREMENT</td>
<td></td>
</tr>
<tr>
<td>IN09_147</td>
<td>INVESTIGATION OF SYSTEM CONFIGURATION AND PRESSURE GRADIENT CONTROL FOR ACTIVE NOISE BARRIER</td>
<td>Sun-Ki Lau, Shin-Keong Tang</td>
</tr>
<tr>
<td>IN09_669</td>
<td>ALUMINIUM NOISE BARRIERS AND ADDED DEVICES: A CASE STUDY USING THE EUROPEAN STANDARD FOR IN-SITU MEASUREMENTS</td>
<td>Marco Conter, Manfred Haider, Reinhard Wehr</td>
</tr>
<tr>
<td>IN09_138</td>
<td>VERTICAL PROFILE OF TRAFFIC NOISE IN HIGH-RISE RESIDENTIAL ENVIRONMENT</td>
<td>Lee Eang, Sheikh Alam, Johnny Heng</td>
</tr>
<tr>
<td>IN09_960</td>
<td>NUMERICAL ANALYSIS AND EXPERIMENT ON NOISE SHIELDING EFFECTS OF EAVES/LOUVERS ATTACHED ON BUILDING FACADE</td>
<td>Rino Otani, Tatsumi Arikara, Shinichi Sakamoto</td>
</tr>
<tr>
<td>IN09_578</td>
<td>A SCALE MODEL STUDY ON BALCONY INSERTION LOSS IN THE PRESENCE OF NON-PARALLEL LINE SOURCES</td>
<td>S. K. Tang</td>
</tr>
<tr>
<td>IN09_056</td>
<td>WINDOWS SOUND INSULATION: EXPERIMENTAL EVALUATION OF DIFFERENT TRAFFIC NOISE SPECTRA</td>
<td>Cinzia Buratti, Elisa Moretti, Marco Vergoni</td>
</tr>
<tr>
<td>IN09_357</td>
<td>NUMERICAL SIMULATION OF THE SOUND FIELD INSIDE A NATURAL VENTILATION WINDOW</td>
<td>Huahua Huang, Jian Kang, Xiojun Qiu</td>
</tr>
<tr>
<td>IN09_738</td>
<td>STATIC PRESSURE COEFFICIENTS OF LABORATORY STANDARD MICROPHONES TYPE LS2 AND ITS INFLUENCE IN THE FREE-FIELD SENSITIVITY LEVEL CALCULATION</td>
<td>Jose-Noe Razo-Razo, Adolfo Esquivel-Delgado, Andres-Esteban Perez-Matsumoto</td>
</tr>
<tr>
<td>IN09_957</td>
<td>TURNKEY FREE-FIELD RECIPROCITY SYSTEM FOR PRIMARY MICROPHONE CALIBRATION</td>
<td>Erling Frederiksen</td>
</tr>
<tr>
<td>IN09_382</td>
<td>PRESSURE CALIBRATION OF MEASUREMENT MICROPHONES IN A FREE FIELD</td>
<td>Salvador Barrera-Figueroa, Maria Diaz-Ben, Finn Jacobsen</td>
</tr>
<tr>
<td>IN09_253</td>
<td>SOUND LEVEL METERS CALIBRATION IN SIMULATED FREE-FIELD</td>
<td>Zemar Sures</td>
</tr>
<tr>
<td>IN09_488</td>
<td>REDUCTION OF UNCERTAINTIES IN SOUND POWER MEASUREMENTS</td>
<td>Stephen Keith</td>
</tr>
<tr>
<td>IN09_544</td>
<td>ANALYSIS OF THE SOURCES OF ERROR IN THE DETERMINATION OF ACOUSTIC POWER BASED ON INTENSITY MEASUREMENTS</td>
<td>Arturo Santillan, Finn Jacobson</td>
</tr>
<tr>
<td>IN09_523</td>
<td>SOUND REDUCTION INDEX COMPARISON BETWEEN LABORATORY AND IN SITU CONDITIONS USING THE SOUND INTENSITY TECHNIQUE FOR DOUBLE MOUNTED PREFABRICATED MATERIALS</td>
<td>Adolfo Esquivel, Andres Esteban Perez, Santiago Jesus Perez</td>
</tr>
<tr>
<td>IN09_293</td>
<td>THE SETTING UP AND UNCERTAINTY EVALUATION OF VIBRATION ACCELEROMETER CALIBRATION SYSTEM BY COMPARISON METHOD</td>
<td>Yeu-Jong Huang, Chao-Jung Chen, Sheng-Hang Wang, Juan-Kai Chen</td>
</tr>
<tr>
<td>IN09_201</td>
<td>A NOISE DOSIMETER SYSTEM WHERE THE CONTRIBUTION FROM THE WEARER’S OWN VOICE IS EXCLUDED</td>
<td>Fredric Lindstrom, Kerstin Persson Waye, Jonas Sjoholm, Magnus Berggren</td>
</tr>
<tr>
<td>IN09_498</td>
<td>MEASURING ROOM ACOUSTIC PARAMETERS USING A HEAD AND TORSO SIMULATOR INSTEAD OF AN OMNIDIRECTIONAL MICROPHONE</td>
<td>C. C. J. M. Hak, M. A. J. Van Haaren, R. H. C. Wennmaekers, L. C. J. Van Luxembourg</td>
</tr>
<tr>
<td>IN09_627</td>
<td>MEASUREMENT OF SOUND ABSORPTION COEFFICIENT IN AN IMPEDANCE TUBE USING ECHO-PULSE METHOD</td>
<td>Hong Hou, Liang Sun</td>
</tr>
</tbody>
</table>
| IN09_520     | CHALLENGES IN MEASURING ACOUSTICAL AND PRESSURE DROP PERFORMANCES OF VERY LARGE REACTIVE-ABSORPTIVE SILENCERS. | Elden Ray
| IN09_279 | VALIDATION OF A NOVEL TPA METHOD FOR TEST-BASED NVH TROUBLESHOOTING | 1412 |
| IN09_238 | CASE STUDIES ON AURALIZATION OF TRANSFER PATHS | 1422 |
| IN09_803 | PRODUCT SOUND DESIGN USING TRANSFER PATH TECHNIQUES | 1428 |
| IN09_986 | SENSOR CONFIGURATION METHOD FOR IDENTIFYING VEHICLE NOISE SOURCES | 1440 |

### VOLUME 3

| IN09_483 | MEASURING NOISE IN HIGH WIND SPEEDS: EVALUATING THE PERFORMANCE OF WIND SHIELDS | 1448 |
| IN09_384 | STRUCTURAL INTENSITY BASED DAMAGE DETECTION ASSESSMENTS OF ALUMINUM PANEL STRUCTURES | 1457 |
| IN09_772 | FAULT DIAGNOSIS OF ROTATING MACHINERY USING THE MAHALANOBIS DISTANCE | 1466 |
| IN09_386 | ACOUSTICAL ANALYSIS OF AN INDOOR TEST FACILITY FOR A 30-MM GATLING GUN | 1473 |
| IN09_058 | LAN-XI, A DISTRIBUTED FRONT-END CONCEPT FOR SOUND AND VIBRATION MEASUREMENTS | 1482 |

### EFFECTS OF SOUND AND VIBRATION ON HUMANS

| IN09_052 | ITEM BIAS IN THE CROSS-CULTURAL EVALUATION OF TONAL CONTENT | 1493 |
| IN09_227 | SUBJECTIVE EVALUATION OF TONALNESS AND RELATION BETWEEN TONALNESS AND UNPLEASANTNESS | 1500 |
| IN09_314 | STANDARDS FOR CALCULATING LOUDNESS OF STATIONARY OR TIME-VARYING SOUNDS | 1508 |
| IN09_460 | COMPARISON OF LOUDNESS CALCULATION PROCEDURES IN THE CONTEXT OF DIFFERENT PRACTICAL APPLICATIONS | 1514 |
| IN09_990 | APPLYING CALCULATED LOUDNESS TO EVALUATE SOUND CHARACTERISTICS IN PRACTICE | 1525 |

### ROAD PAVEMENT DESCRIPTION BY PSYCHO-ACOUSTICAL PARAMETERS FROM CPX DATA

| IN09_445 | ROAD PAVEMENT DESCRIPTION BY PSYCHO-ACOUSTICAL PARAMETERS FROM CPX DATA | 1539 |
| IN09_493 | A SEMANTIC DIFFERENTIAL STUDY ON THE RESPONSE TO TRANSPORTATION NOISE | 1552 |
| IN09_543 | SUBJECTIVE RESPONSES FOR THE COMBINED TRANSPORTATION NOISES | 1561 |
| IN09_658 | THE METRICS OF CONVENTIONAL RAILWAY NOISE : RESULTS OF SIMULATED ENVIRONMENTAL EXPERIMENTS AND SOCIAL SURVEYS | 1566 |
| IN09_410 | REVIEW OF METRICS FOR EVALUATION OF SHINKANSEN RAILWAY NOISE | 1574 |
| IN09_394 | RELATIONSHIPS BETWEEN SUBJECTIVE PREFERENCE AND BRAIN MAGNETIC FIELDS FOR ACCELERATING CAR INTERIOR NOISE | 1582 |
| IN09_536 | CROSS-CULTURAL STUDY ON THE PERCEPTION OF DIESEL POWERTRAIN NOISE | 1590 |
| IN09_195 | PSYCHOACOUSTIC EVALUATION OF INSTATIONARY WIND NOISE TRANSMISSIONED INTO VEHICLES | 1598 |
| IN09_739 | EVALUATION ON TIRE-PAVEMENT NOISE | 1602 |
IN09_337 EFFECTS OF ACOUSTIC PROPERTIES OF VEHICLE HORN ON AUDITORY IMPRESSION AND ESTIMATION OF THE AIM OF ANOTHER DRIVER'S HORN USAGE ............................................................... 1609
Masayuki Takada, Ayako Takeno, Shin-Ichiro Iwamitsu

IN09_336 RESEARCH ON THE ACCEPTABILITY EVALUATION OF SOUNDS TO WARN THE APPROACH OF AN ELECTRIC VEHICLE ................................................................. 1618
Michiaki Sekine, Takeharu Tanaka, Ichiro Sakamoto, Kazumoto Morita

IN09_717 AN INVESTIGATION OF DIFFERENCES IN STARTLE PHYSIOLOGICAL MEASURES BETWEEN SONIC BOOMS AND OTHER TRANSIENTS .................................................. 1627
Andrew Marshall, Patricia Davies, Shirley Rielyk

POWER PLANT NOISE WORKSHOP

IN09_883 MODELING COMMUNITY NOISE FROM POWER PLANTS USING RAY-TRACING SOFTWARE ................................................................. 1636
Frank Brittain

IN09_651 REDUCING VALVE GENERATED NOISE THROUGH FLUID ENERGY AND TURBULENCE CONTROLLING DESIGNS ................................................................. 1648
Sanjay V. Sherikar, Laurence R. Stratton

IN09_581 CHALLENGES FROM UNANTICIPATED POWER PLANT STARTUP NOISE ...................................................................................... 1657
David Purzyck, Henrik Olsen, Frank Brittain

IN09_509 RESONANT SILENCERS FOR SMALLER FANS IN POWER PLANTS ...................................................................................... 1668
Thomas Norris

IN09_408 CONTROLLING POWER PLANT NOISE WITH A STRINGENT C-WEIGHTED NOISE LIMIT ................................................................. 1677
Marland E. Hale

IN09_363 ACHIEVING POWER PLANT ACOUSTICAL GUARANTEES: OUR SUCCESSES ARE AMAZING CONSIDERING WHAT WE HAVE TO WORK WITH ...................................................................................... 1686
Robert Putnam

IN09_354 SOURCES AND RATING CRITERIA OF LOW FREQUENCY GAS TURBINE EXHAUST NOISE: VIA CASE STUDY ...................................................................................... 1698
Roland Joseph Hetzel, Robert A. Putnam

IN09_222 IN DUCT MEASUREMENTS: EXPERIENCES AND IMPROVEMENTS ...................................................................................... 1706
Ulrich Scholz, Christine Klockar, Marco Prette

ACTIVE NOISE AND VIBRATION CONTROL

IN09_782 ACTIVE NOISE CONTROL USING FILTER MAP IN 3-DIMENSIONAL ACOUSTIC FIELD ...................................................................................... 1712
Ikuma Ikeda, Shinya Kijimoto, Koichi Matsuda, Yusuke Koba

IN09_835 ACTIVE NOISE CONTROL OF 3D ENCLOSURE SYSTEM USING CO-FXLMS ALGORITHM ...................................................................................... 1719
In Hyung Yang, Jae-Kang Oh, Jung Yoon Lee

IN09_556 ACTIVE ACOUSTIC POWER CONTROL USING ZERO POWER STRATEGY ...................................................................................... 1725
Nobuo Tanaka, Kenta Takahashi

IN09_596 DESIGN OF AN ANC SYSTEM USING PBS-LMS ALGORITHM IN THE SECONDARY PATH MODELING FILTER ...................................................................................... 1731
Shiva Gholami-Boroujeny, Mohammad Esghghi, Ali Jalali

IN09_770 ACTIVE CONTROL OF CANTILEVER BEAMS USING PIEZOCERAMIC ACTUATORS ...................................................................................... 1739
Changsoo Shin, Chisung Hong, Woei Bong Jeong

IN09_397 ANALYSIS OF AN ACTIVE VIBRATION ISOLATION DEMONSTRATION RIG ...................................................................................... 1749
T Yang, M. J. Brennan

IN09_773 AN EVALUATION OF THE ACTIVE NOISE CANCELLER EARPHONE ...................................................................................... 1758
Yuko Watanabe, Haruo Hamada

IN09_315 DESIGN AND TESTING OF AN ACTIVE CONSTRAINED LAYER DAMPING DEMONSTRATOR FOR AIRCRAFT'S CABIN NOISE REDUCTION ...................................................................................... 1763
Andrea Vigliotti, Assunta Sorrentino

IN09_188 ADAPTIVE CONTROL OF BROADBAND NOISE IN A LIGHT JET ...................................................................................... 1773
Delf Sachau, Oliver Pabst

IN09_929 DISTURBANCE ATTENUATION FOR UNCERTAIN SWITCHED LINEAR SYSTEMS ...................................................................................... 1781
Jamila Rauof, Hannah Michalska

IN09_046 ROBUST CONTROLLER DESIGN OF AN ACTIVE NOISE CONTROL SYSTEM FOR A PROPELLER, AIRCRAFT ...................................................................................... 1790
Kay Kochan, Delf Sachau, Harold Breithbach

IN09_897 CONTROL OF THE ACOUSTIC RADIATION PATTERN FOR A PERSONALISED SOUND FIELD USING AN OPTIMIZED ACOUSTIC DUAL DIPOLE MODEL ...................................................................................... 1798
Mincheol Shin, Philip A. Nelson, Sung Q Lee, Hye Jin Kim, Hong-Yeol Lee, Kang-Ho Park

IN09_303 AN IMPROVED METHOD FOR FLEXIBLY CREATING A LOCALIZED SOUND FIELD REPRODUCTION ZONE ...................................................................................... 1807
Kazuyo Tanaka, Yasuharu Hashimoto, Masahiko Mikawa
KEYNOTE

IN09_685 MODELING THE SOUND TRANSMISSION THROUGH SANDWICH-COMPOSITE STRUCTURES WITH ATTACHED NOISE CONTROL MATERIALS.......................................................................................................................... 1813

NOISE IN HEALTHCARE FACILITIES

IN09_510 IMPACT OF PATIENT DENSITY AND ROOM LAYOUT ON THE NOISE FIELD IN NEONATAL INTENSIVE CARE UNITS ................................................................................................................................. 1825

IN09_489 SOUNDSCAPE DESIGN METHODS FOR A NEONATAL INTENSIVE CARE FACILITY ........................................................................................................................... 1836

IN09_702 PAPER STUDY OF IMPACT NOISE FOR NICU PROJECT .................................................................................................................................................................................................. 1845

THE NEED FOR UPDATES TO ACOUSTIC CRITERIA AND STANDARDS FOR SCHOOL

IN09_694 PERCEPTION AND MEASUREMENTS OF THE PRE-SCHOOL SOUND ENVIRONMENT – BEFORE AND AFTER ACOUSTIC IMPROVEMENTS ........................................................................................................... 1850

IN09_673 OBJECTIVE AND SUBJECTIVE SPEECH INTELLIGIBILITY ASSESSMENTS IN PRIMARY SCHOOL CLASSROOMS ................................................................................................................................................. 1857

IN09_568 SPEECH TRANSMISSION INDEX CRITERIA FOR OPEN PLAN CLASSROOMS IN BRITISH PRIMARY SCHOOLS ................................................................................................................................. 1866

IN09_332 ACOUSTICS OF ELEMENTARY SCHOOL CLASSROOMS: CORRELATIONS OF VARYING BACKGROUND NOISE LEVEL AND REVERBERATION TIME TO STUDENT ACHIEVEMENT ........................................................................ 1875

IN09_172 THE EFFECT OF NOISE ON SPEECH IN ARABIC CLASSROOMS ................................................................................................................................................................................................ 1880

IN09_175 COMBINED EFFECTS OF CLASSROOM REVERBERATION AND NOISE ON SPEECH PERCEPTION BY STUDENTS WITH TYPICAL AND IMPAIRED HEARING ............................................................................. 1886

IN09_355 SPEECH INTELLIGIBILITY AND LISTENING DIFFICULTY TESTS IN AURALIZED CLASSROOMS BY MEANS OF A MULTI-DIPOLE RENDERING SYSTEM .............................................................................. 1894

IN09_219 PREDICTION OF VOCAL EFFORT AND SPEAKERS COMFORT IN LECTURE ROOMS .................................................................................................................................................................... 1903

IN09_150 NOISE - A DAILY STRESSOR; ACOUSTIC ERGONOMICS OF SCHOOLS ................................................................................................................................................................................................ 1912

IN09_158 RECENT NEW ZEALAND INITIATIVES TOWARDS UNDERSTANDING CLASSROOM ACOUSTICS ...................................................................................................................................................... 1922

IN09_479 REVISION OF BUILDING BULLETIN 93 ........................................................................................................................................................................................................ 1931

IN09_703 BUILDING BULLETIN 93: THE PRACTITIONERS VIEW ................................................................................................................................................................................................. 1940

IN09_637 STANDARD FOR SOUND ENVIRONMENT IN SCHOOL BUILDINGS PUBLISHED BY THE ARCHITECTURAL INSTITUTE OF JAPAN ........................................................................................................................................ 1949

IN09_810 REVIEW OF THE IMPLEMENTATION AND RECENT CHANGES OF SEVERAL ACOUSTIC CRITERIA USED IN UNITED STATES SCHOOLS ...................................................................................... 1955

IN09_274 A NEW LOOK AT ACOUSTICAL CRITERIA FOR CLASSROOMS ................................................................................................................................................................................................ 1963

IN09_166 SOME PROJECTS AND IDEAS TO PROMOTE GOOD CLASSROOM ACOUSTICS ............................................................................................................................................................................. 1972

LIGHTWEIGHT CONSTRUCTIONS

IN09_737 QUANTITATIVE COMPARISONS OF RESILIENT CHANNEL DESIGNS AND INSTALLATION METHODS ...................................................................................................................................................... 1978

IN09_373 LIGHTWEIGHT VERSUS MASSIVE CONSTRUCTIONS: SOUND INSULATION RESULTS IN AUSTRIAN DWELLINGS ................................................................................................................................. 1987
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSESSMENT OF FLOOR IMPACT SOUNDS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IN09_464 PREDICTION MODEL FOR THE IMPACT SOUND LEVEL OF DECoupled LIGHTWEIGHT FLOORS</strong></td>
<td>2038</td>
</tr>
<tr>
<td><strong>IN09_656 THE ACTUAL CONDITIONS OF THE FLOOR IMPACT SOUND INSULATION BY THE QUESTIONNAIRE TO WOOD-FRAME CONSTRUCTION HOUSING IN JAPAN</strong></td>
<td>2047</td>
</tr>
<tr>
<td>Tomohito Hirota, Hirotaka Suzuki, Manabu Tanaka, Atsuo Hiramitsu, Hiroshi Sato</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_648 SUBJECTIVE RATINGS OF FLOOR IMPACT SOUNDS IN WOOD-FRAME CONSTRUCTION</strong></td>
<td>2054</td>
</tr>
<tr>
<td>Jongkwan Ryu, Hiroshi Sato, Atsuo Hiramitsu, Manabu Tanaka, Tomohito Hirota, Kenji Kurakata</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_672 DEVELOPMENT OF FLOORS IN WOOD-FRAME CONSTRUCTION TO IMPROVE THE FLOOR IMPACT SOUND INSULATION</strong></td>
<td>2063</td>
</tr>
<tr>
<td><strong>IN09_664 PERFORMANCE FOR FLOOR IMPACT SOUND INSULATION OF WOOD-FRAME CONSTRUCTION HOUSING IN JAPAN</strong></td>
<td>2071</td>
</tr>
<tr>
<td>Manabu Tanaka, Tomohito Hirota, Atsuo Hiramitsu, Hiroshi Sato</td>
<td></td>
</tr>
<tr>
<td><strong>TESTING OF ARCHITECTURAL SYSTEMS IN LAB AND FIELD</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IN09_766 SETTINGS FOR MEASURING ENSEMBLE AVERAGED SURFACE NORMAL IMPEDANCE</strong></td>
<td>2080</td>
</tr>
<tr>
<td>Toru Otsubu, Che Din Nauli, Reiji Tomikawa, Noriko Okamoto, Kazuo Amiawati</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_245 SOUND INTENSITY ON AN ABSORBER IN REVERBERANT CONDITIONS</strong></td>
<td>2089</td>
</tr>
<tr>
<td>Cheol-Ho Jeong</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_277 RANDOM INCIDENCE ABSORPTION FROM OBLIQUE ABSORPTION MEASUREMENT</strong></td>
<td>2095</td>
</tr>
<tr>
<td>John Gagliardi</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_091 ABSORPTION COEFFICIENTS PART 1: IS SQUARE AREA ENOUGH?</strong></td>
<td>2104</td>
</tr>
<tr>
<td>Ron Sauro, Michael Vargas, Gary Mange</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_092 ABSORPTION COEFFICIENTS PART 2: IS “EDGE EFFECT” MORE IMPORTANT THAN EXPECTED?</strong></td>
<td>2112</td>
</tr>
<tr>
<td>Ron Sauro, Michael Vargas, Gary Mange</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_429 CHARACTERISTICS OF THE ORIGAMI IMPULSE SOURCE</strong></td>
<td>2122</td>
</tr>
<tr>
<td>Emi Toyoda, Satoshi Sugie, Junichi Yoshimura</td>
<td></td>
</tr>
<tr>
<td><strong>KEYNOTE</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IN09_299 AN ALGORITHM TO ADJUST THE CLARITY OF ROOM IMPULSE RESPONSES FOR SUBJECTIVE TESTS.</strong></td>
<td>2130</td>
</tr>
<tr>
<td>Csaba Huszty, Falup Augusztinovich, Shinichi Sakamoto</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_686 PERCEPTION AND ENVIRONMENTAL IMPACT OF WIND TURBINE NOISE</strong></td>
<td>2139</td>
</tr>
<tr>
<td>Kerstin Persson Waye</td>
<td></td>
</tr>
<tr>
<td><strong>ROAD TRANSPORTATION NOISE – TRAFFIC MANAGEMENT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IN09_734 THE TRUE COST OF ROAD TRAFFIC NOISE IN PORTUGAL</strong></td>
<td>2150</td>
</tr>
<tr>
<td>Cecilia Rocha, Antonio Carvalho</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_461 VALUATION OF ROAD TRAFFIC NOISE PROFILES</strong></td>
<td>2161</td>
</tr>
<tr>
<td>Staffan Algers, Pia Sundberg, Camilla Bystrom</td>
<td></td>
</tr>
<tr>
<td><strong>IN09_270 SIMPLE METHOD FOR PREDICTING NOISE IN THE VICINITY OF SIGNALIZED INTERSECTIONS</strong></td>
<td>2169</td>
</tr>
<tr>
<td>Yoshihara Namikawa, Hiroshi Yoshinaga, Terutoshi Tajika, Yassuo Obino, Koichi Yoshihisa, Kohei Yamamoto</td>
<td></td>
</tr>
</tbody>
</table>
### VOLUME 4

| **IN09_259** | An Experimental Procedure to Minimize Traffic Noise Inside Bus Stations: A Case Study in Brazil | 2178 |
| **IN09_168** | Noise Impact of an International Traffic Corridor: A Useful Method to Support Traffic Infrastructures Planning | 2185 |
| **IN09_123** | ISAUR: An Integrated Tool for Modelling the Noise Impact of Urban Traffic Control Equipments | 2193 |
| **IN09_632** | A Study of Diffraction Correction Including Durability of the Acoustical Property of Porous Asphalt Pavement - For Expressways | 2201 |

#### Road Vehicles – Measurement and Modeling Methods

| **IN09_255** | Noise Measurement System Meets New ISO Standards in Pass By Noise with Unique Global Positioning and Triggering Capabilities | 2209 |
| **IN09_903** | Additional Sound Emission Provisions in New European Type Approval Method for Exterior Noise of Road Vehicle | 2217 |
| **IN09_698** | Hybrid Source Localization Method to Detect Noisy Vehicles Traveling on the Road | 2224 |
| **IN09_047** | Measurement of Sound Emission from Military Off-Road Vehicles Driving on a Curved Path | 2231 |
| **IN09_751** | Truck Noise Source Heights for Barrier Analysis as Determined from Beamforming | 2236 |
| **IN09_024** | Sound Power Levels of Trucks at Low Speeds | 2245 |
| **IN09_661** | Experimental Investigation of the Validity of an Alternative Stationary Exhaust Noise Test Based on Engine Racing Conditions with Wide Open Throttle | 2256 |
| **IN09_296** | Noise Source Ranking of an All-Terrain Vehicle to Meet Pass-by Target | 2265 |
| **IN09_895** | Modelling of the Sound Emission of Road Vehicles and Results of Recent Experiments | 2274 |
| **IN09_215** | Road Traffic Noise Prediction Model "ASJ RTN-Model 2008" Proposed by the Acoustical Society of Japan - Part 2: Calculation Model of Sound Emission of Road Vehicles | 2286 |
| **IN09_610** | Road Traffic Noise Prediction Model "ASJ RTN-Model 2008" Proposed by the Acoustical Society of Japan - Part 3: Calculation Model of Sound Propagation | 2295 |
| **IN09_412** | Driving Patterns in Crossings and Roundabouts and Its Consequences for Noise Emissions | 2304 |

#### Recreation Noise

| **IN09_874** | Report of Measured Racetrack Noise Levels | 2313 |
| **IN09_924** | Is Drag Racing Louder Than a NASCAR Speedway? | 2318 |
| **IN09_524** | Recreational Gun Range Noise - The Price of Freedom | 2327 |

---

*Authors of the respective papers.*
NOISE AND NOISE CONTROL FROM ALTERNATIVE ENERGY FACILITIES

IN09_956 WIND FARMS AND NOISE ................................................................................................................................. 2336
Ramani Ramakrishnan

IN09_936 NUISANCE NOISE AND THE DEFENSE OF A WIND FARM ................................................................................. 2345
Robert O'Neal, Richard Lampeter

IN09_935 APPARENT TRENDS IN WIND TURBINE GENERATOR NOISE CRITERIA AND REGULATION GUIDANCE ................................................................................................................................. 2353
Mark Storm

IN09_811 CONCERNS WITH USING SIMPLIFIED WIND PROFILES IN DETERMINING NOISE IMPACTS OF WIND TURBINES ........................................................................................................... 2362
Ramani Ramakrishnan, Tim Prenger, Payam Ashtiani, Vince Gambino

IN09_788 OVERVIEW OF NOISE ISSUES IN THE ALTERNATIVE ENERGY INDUSTRY ................................................................. 2370
James Barnes

IN09_688 WIND TURBINE NOISE DIAGNOSTICS .................................................................................................................. 2378
Werner Richarz, Harrison Richarz

IN09_629 EXPERIMENTAL CHARACTERIZATION OF ACOUSTIC SOURCE MECHANISMS OF LARGE WIND TURBINES ACCORDING TO POWER REGULATION METHODS ............................................................................. 2385
Brian Howe, Nick McCabe

IN09_517 RECENT DEVELOPMENTS IN ASSESSMENT GUIDELINES FOR SOUND FROM WIND POWER PROJECTS IN ONTARIO, CANADA, WITH A COMPARISON TO ACOUSTIC AUDIT RESULTS ........................................................................ 2394
Gwag-Se Lee, Su-Hyun Shin, Cheolung Cheong, Sang-Soo Jung

IN09_391 WIND TURBINE ACOUSTIC ACTIVITIES AT THE NATIONAL WIND TECHNOLOGY CENTER ................................. 2402
Ardinda Huskey, Patrick Mortarrey, Eric Simley

IN09_204 USING THE NOISE PERCEPTION INDEX FOR ASSESSING WIND TURBINE NOISE ....................................................... 2411
George Hessler

ASSESSING SOUNDSCAPES OF PARKS AND WILDERNESS AREAS

IN09_507 SETTING LIMITS FOR ACCEPTABLE NOISE IN NATIONAL PARKS ............................................................................. 2420
Nicholas Miller

IN09_601 GRAND CANYON VS. THE SOUNDSCAPE FROM NOWHERE .................................................................................. 2428
Dickson J Hingson

IN09_570 SOUNDSCAPE IN URBAN PARKS AND WILDERNESS AREAS: A REVIEW OF STUDIES IN ITALY .......................................................... 2435
Giovanni Brambilla, Patrizio Verardi

IN09_319 APPLICATION OF THE TRANQUILLITY RATING PREDICTION TOOL ................................................................. 2442
Greg Watts, Rob Pheasant, Kirill Horoshenkov

IN09_722 PRODUCING A SCALE TO MEASURE THE RESTORATIVENESS OF URBAN PARK SOUNDSCAPES ................................................................. 2451
Sarah Payne

COMMUNITY NOISE

IN09_667 DALYS ARE THE ANSWER, BUT WHAT WAS THE QUESTION? ............................................................................. 2458
Irene Van Kamp, Anne Knol, Guus De Hollander, Dienede Schram, Elise Van Kempen, Danny Houthuijs, Erik Lebret

IN09_575 TRANSPORT NOISE EXPOSURE AND CHILDREN'S BLOOD PRESSURE ........................................................................ 2469
Stephen Stansfeld, Charlotte Clark

IN09_444 BLOOD PRESSURE IN 8-14 YEAR OLD CHILDREN IN RELATION TO TRAFFIC NOISE AT HOME -RESULTS OF THE GERMAN ENVIRONMENTAL SURVEY FOR CHILDREN (GERES IV) ................................................................. 2477
Wolfgang Babitsch, Hannelore Neuhauser, Michael Thamm, Christine Schulz, Margarete Setzvert, Kerstin Becker, Andre Conrad, Catrin Zigelski, Marthe Kolossa-Gehring

IN09_361 ROAD TRAFFIC AND CARDIOVASCULAR HEALTH EFFECTS - ROAD TRAFFIC NOISE AND AIR POLLUTION ................................................................................................................................. 2484
Yvonne Kluijtenaar, Henk Me Mulder

IN09_451 A SYSTEMATIC COMPARISON OF AIRCRAFT NOISE INDUCED EEG AWAKENINGS AND AUTOMATICALLY DETECTED CARDIAC AROUSALS ............................................................................. 2489
Mathias Basner, Uwe Muller, Eva-Maria Elmenhorst, Barbara Griefahn

IN09_185 CARDIAC AROUSALS CAUSED BY TRANSPORTATION NOISE DURING SLEEP ................................................................. 2496
Barbara Griefahn, Peter Brosde, Anke Marks, Mathias Basner

IN09_167 PRACTICAL GUIDANCE FOR RISK ASSESSMENT OF TRAFFIC NOISE EFFECTS ON SLEEP ......................................................... 2505
Mathias Basner, Uwe Muller, Barbara Griefahn

IN09_371 SLEEP DISTURBANCE DUE TO NOISE: KEY RESEARCH ISSUES FOR THE FUTURE ......................................................... 2513
Ken Hume, Mathias Basner, Barbara Griefahn
NOISE IN THE HIGH RISE CITIES

IN09_200 A NOISE DOSIMETER SYSTEM WHERE THE CONTRIBUTION FROM THE WEARER’S OWN VOICE IS EXCLUDED by Frederic Lindstrom, Jonas Sjoholm, Magnus Berggren .................................................. 2521

IN09_137 VERTICAL PROFILE OF TRAIN NOISE AND INDOOR NOISE IN HIGH-RISE RESIDENTIAL ENVIRONMENT by Sheikh Alam, Lee Eang, Johnny Heng .............................................................. 2526

IN09_795 TRAIN NOISE IN 3-D CONSIDERATION by Richard K. Kwon ................................................. 2535

IN09_779 DEVELOPMENT OF A ROAD TRAFFIC NOISE LEVEL DISTRIBUTION MODEL by Y. C. Chu, C. H. Ng, S. K. Tang ................................................................. 2540

IN09_755 EXPOSURE OF THE HONG KONG URBAN POPULATION TO ROAD TRAFFIC NOISE AS A FUNCTION OF URBAN FORM by Kim-Che Lam .......................................................... 2547

IN09_831 THE STUDY OF A NEW METRIC FOR URBAN HIGH-RISE BUILDING TRAFFIC NOISE MITIGATION USING COST BENEFIT ANALYSIS AND PRIORITIZATION METHODS by Hom Au, Kin Wai Cheng, Maurice Yeung ................. 2555

IN09_298 EVALUATION OF NOISE EMISSION FROM IN-SERVICE VEHICLES by Hiroshi Yashihuga, Yoshisharu Namikawa .......................................................... 2564

IN09_262 PREDICTING NOISE REDUCTION BY ELECTRICIFICATION OF AUTOMOBILES by Wing-Tat Hung, Chung-Fai Ng, Randolph Leung, Wing-Gun Wong, Mike Mk Law, Ka-Yee Ho, Ricky Mak ......................................... 2570

IN09_539 DEVELOPMENT OF CPX TECHNIQUE IN MEASURING TYRE/ROAD NOISE IN HONG KONG by Wai Kwong Ng, Ping Sum Ng, Wing Tat Hung .......... 2576

IN09_269 MEASUREMENT OF TYRE/ROAD SURFACE NOISE WITH CLOSE-PROXIMITY METHOD IN HONG KONG by Jiping Zhang, Marc Buret, Lu Sun, Zhao Chunjun .............................................. 2584

IN09_349 SCREENING BY EDGE-MODIFIED BARRIERS OF ROAD TRAFFIC NOISE IN HIGH-RISE BUILDINGS by Byung Chan Lee, Jun Hee Ko, Seo Il Chang, Kai Ming Li .............................................................. 2594

IN09_832 DETERMINATION OF AMBIENT ENVIRONMENTAL NOISE LEVELS FOR OPTIMIZING VIAUCOT ENCLOSURE NOISE BARRIER BY URBAN HIGH-RISE BUILDINGS AND PREDICTING MAGNETIC NOISE by Albert Allen, Mark Moeller .......................................................... 2601

IN09_801 A COMPARISON ASSESSMENT OF 2-D AND 3-D ANALYSIS FOR AIRCRAFT NOISE IN A HIGHRISE CITY by Sheikh Alam, Lee Eang, Johnny Heng ............................................................ 2611

AIRCRAFT INTERIOR NOISE

IN09_381 COMPARISON OF HYBRID MODELLING TOOLS FOR INTERIOR NOISE PREDICTION by Alexander Pfeiffer, Stephan Brühl, Stephan Tewes ............................................................. 2619

IN09_933 RESPONSE OF A CURVED RIBBED PANEL STRUCTURE TO TBL SOURCE VS. DIFFUSE FIELD EXCITATION by Reza Madjlesi ............................................................................. 2627

IN09_907 ANALYSIS OF SOUND TRANSMISSION THROUGH AIRCRAFT FUSELAGES EXCITED BY TURBULENT BOUNDARY LAYER OR DIFFUSE ACOUSTIC PRESSURE FIELDS by Ulf Orenius, Vincent Cotoni, Andrew Wareing .......................................................... 2637

IN09_869 EVALUATION OF COMPLEX EIGENMODES OF STIFFENED CYLINDRICAL SHELLS USING ANALYTICAL AND NUMERICAL METHODS by Coyette Jean-Pierre, Lielens Gregory, Van Den Nieuwenhof Benoit, Van Antwerpen Bernard, Neple Pascale .......................................................................................... 2646

IN09_059 VIBROACOUSTIC CHARACTERIZATION OF MODALLY DENSE BUILT-UP PANELS WITH APPLIED DAMPING by Jiping Zhang, Rose Mary Su, Lu Sun, Weihong Liu, Changjun Zhao .......................................................... 2654

IN09_413 ADD-ON DAMPING PATCHES EFFICIENCY ON SOUND TRANSMISSION THROUGH A THIN PLATE UNDER AERODYNAMIC OR ACOUSTIC EXCITATION by Frederic Lindstrom, Jonas Sjoholm, Magnus Berggren ....................................................... 2663

IN09_474 NUMERICAL PERFORMANCE COMPARISON OF VISCOELASTIC MATERIAL DAMPING TO EQUIVALENT MASS AS ACOUSTIC TREATMENTS TO AIRCRAFT FUSELAGE STRUCTURE UNDER VARIOUS EXCITATIONS by Esen Cintosun, Noureddine Atalla, Tatjana Stecenko ................................................................................. 2673

IN09_260 COMPOSITE FUSELAGE CHARACTERISTICS AND ADDITIONAL CONSIDERATIONS FOR NOISE CONTROL TREATMENTS by David Gries, Hemang Sheth .................................................................................. 2682

IN09_691 TRANSMISSION LOSS THROUGH MOUNTS CONNECTED DOUBLE WALL LIGHTWEIGHT STRUCTURES by Julien Legault, Noureddine Atalla ........................................................................ 2690
IN09.946 IMPROVED TRANSMISSION LOSS OF LIGHT-WEIGHTED PANELS BY PRESSURE-DIFFERENCE INCREASED STIFFNESS .............................................................................................................................................................................................. 2699
IN09.527 NUMERICAL INVESTIGATION OF THE TRANSMISSION LOSS OF SLITS FOR AIRBORNE SEA PREDICTIONS .......................................................... 2706
VINCENT COTONI, JULIO CORDIOLI, PHIL SHORTER
IN09.280 STRUCTUREBORNE NOISE CONTROL OF OSCILLATING PUMPS .................................................................................................................. 2715
THIAGO ZMJEVERDI, JEFF WEAVER, ROBERT SANETICK
IN09.944 COMPARATIVE INTERIOR HELICOPTER NOISE ANALYSIS IN STATIC AND IN-FLIGHT CONDITIONS .................................................. 2724
TINO BUCAK, DORIS NOVAK, Dubravko Miljkovic
IN09.040 THE EFFECTS OF NOISE ON PERSONNEL TRAVELING IN COMMERCIAL HELICOPTERS ........................................................................... 2729
GLENN PINSENT

AEROCOUSTICS AND FAN NOISE

IN09.526 PRE-DESIGN PARAMETRIC STUDY OF STATOR GUST INTERACTION NOISE ............................................................................................................. 2737
HELENE POSSON, MICHEL ROGER, STEPHANE MOREAU
IN09.597 STUDY OF AXIAL FAN GRILLES NOISE AND AERODYNAMIC CHARACTERISTICS ........................................................................................................ 2746
GREGOR ALIC, MARKO HOCEVAR, BRANE SREFIX
IN09.902 INFLOW TREATMENT FOR SMALL SCALE AXIAL FANS UNDER UNFAVORABLE INFLOW CONDITIONS .............................................................................. 2755
YOON-SHIC SHIN, J. SMART BOLTON, LUC MONGEAU
IN09.709 A MODEL TO PREDICT THE CANCELING RESPONSE OF FLOW-EXCITED RESONATORS FOR THE REDUCTION OF AXIAL TURBOMACHINE NOISE ........................................................................................................................................................................................................... 2764
LEE J. GORNY, GARY H. KOOPMANN, DEAN E. CAPONE
IN09.668 ON LOUDSPEAKER POSITIONS FOR ACTIVE NOISE CONTROL (ANC) SYSTEM IN A DUCT ........................................................................................................ 2776
OFLRA RUBIN, YOEL NAOR, KIFR KIRSHNER, TIZIKA FRIDMAN
IN09.289 HIGH FREQUENCY NOISE GENERATION BY IMPINGING JETS ............................................................................................................................... 2785
RAMANI RAMAKRISHNAN, SERGIO RAIMONDO, ANANT GREWAL, GARY ELFSTROM

PASSIVE TECHNIQUES IN VIBRATION AND NOISE CONTROL

IN09.681 A NOISE CONTROL EXPERIMENT OF A DIESEL ENGINE TURBO COMPRESSOR AND CHARGE AIR COOLER SYSTEM .............................................................................................................................. 2793
MATIAS AURA, ARI KARJALAINEN
IN09.719 THE USE OF MAGNETOREOLOGICAL DAMPER TO CONTROL VIBRATION AND NOISE IN MECHANICAL SYSTEMS ........................................................................................................................................................................................................... 2802
MAREK SIAURY
IN09.076 THE ROLE OF MATERIAL DAMPING TYPE IN DETERMINING MODAL PARAMETERS OF NONLIGHTLY DAMPED SYSTEMS .................................................................................................................. 2809
FRANCISCO SIMON, DAVID K. ANTHONY
IN09.687 DESIGN AND PERFORMANCE EVALUATION OF A VERTICAL VIBRATION ABSORBER USING NUMERICAL SIMULATION AND SHOCK TEST .................................................................................................................. 2818
JUNG-HWAN LEE, SANG GIL PARK, JONG-WON LEE, JAE-EUNG OH, JUNG-YOUN LEE

NUMERICAL MODELLING

IN09.374 LOSS FACTOR ESTIMATION USING THE IMPULSE RESPONSE DECAY METHOD ON A STIFFENED STRUCTURE ........................................................................................................................................................................................................... 2826
RANDOLPH CABELL, NOAH SCHILLER, ALBERT ALLEN, MARK MUELLER
IN09.226 PREDICTION OF THE INSERTION LOSS OF LARGE ENCLOSURES USING A COMBINED SEA/IMAGE SOURCES APPROACH ........................................................................................................................................................................................................... 2835
FRANCK SGARD, HUGUES NELISSE, NOU EDDINE ATTALIA, CÉLSE KAFUI AMEDIN, REMY ODDO
IN09.027 INTERIOR STRUCTURE BORNE NOISE PREDICTION OF THE CABIN OF A HIGH SPEED TRAIN USING FE-SEA HYBRID METHODS ........................................................................................................................................................................................................... 2844
JORDI JOSÉ, JOAN SAPENA, FAUSTINO GUERRIVEL, DENIS BLANCHET
IN09.958 EXPERIMENTAL VERIFICATION OF SEA MODEL OF A SPACECRAFT ANTENNA REFLECTOR ........................................................................................................................................................................................................... 2853
MARCUS CHAXAYO-MARGUAN, FRANCISCO SIMON, JOSHEBA GARCIA-ETXIARRITXU, SLAHEDDINE FRIKHA, JESUS LOPEZ-DIEZ, CARLOS TERRESE-ABOITIZ
IN09.529 SEA PREDICTION OF VEHICLE INTERIOR NOISE USING EXTERIOR LOADING COMPUTED BY FAST MULTIPLE BEM ........................................................................................................................................................................................................... 2862
JULIO CORDIOLI, SEBASTIAN MUeller, TERENCE CONNELLY
IN09.530 USE OF FAST MULTIPLE BEM TO CALCULATE AUTOMOTIVE EXTERIOR ACOUSTIC LOADS IN SEA MODELS ........................................................................................................................................................................................................... 2871
SEBASTIAN MUeller, VINCENT COTONI, TERENCE CONNELLY
IN09_553 EVALUATION OF DAMPING LOSS FACTOR ESTIMATION METHOD IN STATISTICAL ENERGY ANALYSIS .......................................................... 2880
Satoshi Morita, Takayuki Koizumi, Nobuyuki Tsuchiuchi, Hiroshi Uehara

IN09_689 MODELLING LAMINATED STEEL PANELS AND COMPARISON WITH EXPERIMENTAL RESULTS .................................................. 2890
Toyoki Yamamoto, Yukihisa Kuriyama, Mohamed-Ali Hamdi, Abderazzak Omrani, Noureddine Atalla, Mohamed Rachik, Marc Anciant, Lasten Mebarek

IN09_599 VIBRO-ACOUSTICS BEHAVIOUR OF LAMINATED STEEL PANELS WITH SOUND PACKAGE COMPONENTS ................................................................. 2899
Kamel Amichi, Noureddine Atalla

VOLUME 5

IN09_582 FDTD ANALYSIS ON THE SOUND INSULATION PERFORMANCE OF WALL SYSTEM WITH NARROW GAPS ........................................................................... 2908
Takumi Asakura, Shinichi Sakamoto

NUMERICAL MODELING OF ACCOUSTICAL MATERIALS

IN09_446 ENCLOSURE NOISE CONTROL STRATEGIES USING MULTISCALE POROELASTIC MATERIALS: NUMERICAL PREDICTIONS AND EXPERIMENTAL VALIDATIONS .............................................................. 2917
François-Xavier Bécot, Luc Jaouen, Franck Sgard, Neystine Amirouche

IN09_677 UNIFIED MULTI-PHASE MODELING FOR COUPLED ACOUSTIC, ELASTIC AND POROELASTIC MEDIA ........................................................................ 2926
Joong Seok Lee, Yeon June Kang, Yoon Young Kim

IN09_799 COMPONENT MODE SYNTHESIS BASED ON NORMAL MODES FOR POROELASTIC MATERIALS: RESULTS ........................................................................... 2931
Olivier Dazel

IN09_727 TRIM FEM SIMULATION OF A COMPLETE SEAT STRUCTURE WITH FOAM CUSHIONS UNDER STRUCTUREBORNE AND AIRBORNE EXCITATIONS ................................................................................ 2937

IN09_870 ACOUSTIC TRANSMISSION CHARACTERISTICS OF MECHANICAL STRUCTURES WITH POROUS MATERIAL TREATMENT USING REFINED FINITE ELEMENT MODELS ........................................................................................................... 2947
Coyette Jean-Pierre, Lielens Gregory, Van Den Nieuwenhof Benoit

IN09_180 ON SOUND ABSORPTION PROPERTIES OF BARK FIBER AND ITS ESTIMATION METHOD ........................................................................ 2955
Masanori Nakazato, Kumihiko Ishihara

IN09_776 A NON-LINEAR IMPEDANCE MODEL FOR ACOUSTIC LINERS ............................................................................................................................. 2964
Dhifanou Hichem, Noureddine Atalla, Raymond Panneton, Celse Amedine

CONSUMER PRODUCTS AND INDUSTRIAL EQUIPMENT

IN09_011 A NEW APPROACH TO NOISE CONTROL IN THE WORKPLACE .......................................................................................................................... 2972
Robert D. Bruce, Bryant Levesque, Arno Bommer, Kimberly Leftowitz

IN09_871 ATTENUATING RETRACTABLE SOOTBLOWER NOISE ......................................................................................................................... 2978
Beau Miller, Clint Brown

IN09_771 MAKING SHOP NOISE TESTS UNDER DIFFICULT CIRCUMSTANCES ........................................................................................................... 2986
Arno Bommer, Robert Bruce

IN09_039 THE ACOUSTIC DESIGN OF GAS TURBINE BLEED AIR DISTRIBUTION SYSTEMS .......................................................... 2993
Peter McGuigan

NOISE FROM INFORMATION TECHNOLOGY EQUIPMENT

IN09_860 CHANGES IN ECMA STANDARDS FOR MEASUREMENT OF NOISE FROM IT PRODUCTS ........................................................................... 3002
Robert Hellweg, Egons Dunens, Eric Baugh

IN09_455 BINAURAL MEASUREMENTS IN AN INFORMATION TECHNOLOGY ACOUSTIC PROGRAM .......................................................................................... 3009
Wade Bray

IN09_156 ESTIMATING NOISE EMISSION FROM FAN-COOLED PACKAGES .................................................................................................................. 3018
David Nelson

IN09_537 FAN TONE ESTIMATION USING SURFACE-AVERAGED SOUND PRESSURE SPECTRA .......................................................................................... 3025
Jered Wikander, Brian Kluge, Eric Baugh

IN09_706 INVESTIGATION OF FAN LAW ACCURACY FOR SMALL SCALE ELECTRONIC COOLING BLOWERS .......................................................................................................................... 3034
Jessica Gallbrandy, Marco Beltman, Mark Macdonald

IN09_741 STUDY ON VIBRATION MEASUREMENT USING QUARTER SIZE PLENUM FOR NOISE MEASUREMENT, PART 1: NOISE AND VIBRATION CHARACTERISTICS OF SMALL FAN .................................................................................................................. 3043
Gaku Minorikawa, Haruyuki Takahashi, Yasunori Kawabe, Ikuo Kimizuka, Toshiaki Nakayama
CONSUMER PRODUCTS AND INDUSTRIAL EQUIPMENT

IN09.742 STUDY ON VIBRATION MEASUREMENT USING QUARTER SIZE PLENUM FOR NOISE MEASUREMENT, PART 2: EFFECT OF INSTALLATION SETUP OF FAN ................................................................. 3049

IN09.044 SEEK NOISE PREDICTION OF HARD DISK DRIVES USING ACOUSTIC TRANSFER FUNCTION METHOD .......................................................................................................................... 3055

Feng Gao, Weizhong Lin, Chong Wei Lee, Eng Hong Ong

IN09.622 CONTAMINATION OF ACOUSTIC AUDIO INPUT TO HANDHELD AND MOBILE COMPUTING DEVICES ............................................................................................................................................... 3063

Willem Baltman, Jose Cordova

IN09.535 DECLARED SOUND POWER LEVEL BASED ON SMALL SAMPLE SIZE ........................................................................................................................................................................... 3072

Eric Baugh, Brian Kluge, Kaleen Man

VISUALIZATION OF NOISE SOURCES AND PROPOGATION

IN09.787 DISPLAY PROBLEM ON ACOUSTIC SOURCE IDENTIFICATION USING BEAMFORMING METHOD ............................................................................................................................................... 3142

Choon-Su Park, Jong-Hoon Jeon, Yang-Hann Kim, Young-Key Kim

IN09.866 APPLICATION OF THE AVERAGE BEAMFORMING IN 3D DIFFUSE FIELDS ........................................................................................................................................................................... 3151

Paolo Castellini, Andrea Sassaroli

IN09.901 ACOUSTIC PHASED ARRAY VIDEOS FROM A LARGE CONSTRUCTION SITE ...................................................................................................................................................... 3159

Robert Dougherty

IN09.919 HYBRID BEAMFORMING TECHNIQUE TO COMBINE SOME ADVANTAGES OF DATA INDEPENDENT AND DATA DEPENDENT METHODS ........................................................................................................................................ 3168

Jean-Claude Pascal, Jing-Fang Li

IN09.399 SOUND SOURCES LOCALIZATION IN ENCLOSED SPACES BASED ON TIME REVERSAL MIRROR TECHNIQUE ............................................................................................................................................... 3176

Zeng Xiangyang, Zhang Jianjun

IN09.162 A SOURCE LOCALIZATION APPROACH OF THE UNDERWATER LOW-FREQUENCY SOUND WITH SENSORS IN AIR ........................................................................................................................................... 3181

Jiancheng Tao, Xiaojuan Qiu, Ning Han

IN09.864 ACOUSTIC HOLOGRAPHY: TIKHONOV REGULARISATION IN COMPARISON WITH THE IMPROVEMENT OF THE PROPAGATOR ........................................................................................................................................... 3189

Thibault Le Bourdon, Vincent Martin

IN09.910 MEASUREMENT OF THE INCIDENT SOUND POWER USING NEAR FIELD ACOUSTIC HOLOGRAPHY ................................................................................................................................. 3196

Finn Jacobsen, Elisabet Tiana Roig

USE OF MICROPHONE ARRAYS FOR ACOUSTIC ANALYSIS

IN09.916 BACKWARD PROPAGATION OF SOUND PRESSURE FIELDS RADIATED BY IMPACTED PLATES USING A TRANSIENT ACOUSTICAL HOLOGRAPHY APPROACH ................................................................................................................................. 3204

Jean-François Blais, Annie Ross
### EU NOISE DIRECTIVE

- **SOUND QUALITY BASED ON PHYSICAL METRICS**
- **EXPOSURE OF ENGINE DRIVERS TO NOISE - NEW CHALLENGES RESULTING FROM THE EFFECTS OF IMPULSE NOISE ON THE HEARING AND STAPEDIUS REFLEX EFFICIENCY**
- **WORKERS FROM ROLLING STOCK PLANT**
- **SELF-ASSESSMENT OF HEARING STATUS AND RISK OF NOISE-INDUCED HEARING LOSS IN WORKERS USING HEADPHONES**

### SOUND POWER AND SOUND ENERGY DETERMINATION FOR NOISE SOURCES

- **A HYBRID TECHNIQUE FOR DETERMINING SOUND POWER RADIATION FROM A PLANAR SOURCE**
- **IN SITU DETERMINATION OF TRANSFORMER SOUND POWER LEVELS – PART 1: METHODS**
- **IN SITU DETERMINATION OF TRANSFORMER SOUND POWER LEVELS – PART 2: RESULTS**
- **COMPARISONS OF IN-SITU SOUND MEASUREMENTS USING THE SOUND PRESSURE AND SOUND INTENSITY METHODS**

### EFFECTS OF SOUND AND VIBRATION ON HUMANS

- **SUBJECTIVE IMPRESSION OF COPY MACHINE NOISES: AN EXAMINATION OF PHYSICAL METRICS FOR THE EVALUATION OF SOUND QUALITY**
- **SUBJECTIVE IMPRESSION OF COPY MACHINE NOISES: AN IMPROVEMENT OF THEIR SOUND QUALITY BASED ON PHYSICAL METRICS**
- **CONSONANCE EVALUATION OF PLUCKED-STRING INSTRUMENT TONES BASED ON A MODIFIED CWT CUMULATIVE ENERGY**

### OCCUPATIONAL NOISE

- **MEASURING THE NOISE EXPOSURE LEVEL OF WORKERS USING STANDARD ISO9612: CASE STUDY**
- **MEASUREMENT METHODOLOGY AND SURVEY OF NOISE EXPOSURE IN CALL CENTRES USING HEADPHONES**
- **NOISE EXPOSURE FROM COMMUNICATIONS HEADSETS: THE EFFECTS OF EXTERNAL NOISE, DEVICE ATTENUATION AND EFFECTIVE LISTENING SIGNAL-TO-NOISE RATIO**
- **ASSESSMENT AND MEASUREMENT OF OCCUPATIONAL NOISE EXPOSURE - A THREE-STEP APPROACH**

### Additional Entries

- **ACOUSTIC HOLOGRAPHY: IMPROVEMENT OF THE PROPAGATOR BY USE OF A GENETIC ALGORITHM**
- **TURBULENT FLOW SENSING USING ACOUSTIC TOMOGRAPHY**
- **MEASURING ACOUSTIC IMPEDANCE OF PET MATERIALS**
- **MEASUREMENT OF SUBWOOFER DIRECTIVITY IN NON-ANECHOIC ROOMS**
- **THE SOUND SOURCE EMITTING ACOUSTIC ENERGY IN FREQUENCY BAND FROM 8KHZ TO 50KHZ**
- **THE SOUND SOURCE EMITTING ACOUSTIC ENERGY IN FREQUENCY BAND FROM 8KHZ TO 50KHZ**
- **THE SOUND SOURCE EMITTING ACOUSTIC ENERGY IN FREQUENCY BAND FROM 8KHZ TO 50KHZ**
- **THE SOUND SOURCE EMITTING ACOUSTIC ENERGY IN FREQUENCY BAND FROM 8KHZ TO 50KHZ**
- **THE SOUND SOURCE EMITTING ACOUSTIC ENERGY IN FREQUENCY BAND FROM 8KHZ TO 50KHZ**
- **THE SOUND SOURCE EMITTING ACOUSTIC ENERGY IN FREQUENCY BAND FROM 8KHZ TO 50KHZ**

---

**Reimer Paulsen, Sandra Dantscher**

**Helmut Strasser, Hartmut Irle**

**Malgorzata Pawlaczyk-Luszczynska, Adam Dudarewicz, Malgorzata Zamojska, Mariola Sliwinska-Kowalska**

**Léon Thiery, Jean Jacques**

**Christian Giguère, Hilmi R. Dajani**

**Marc Asselineau, Aline Gaulupeau**

**Nicolas Trompette, Jacques Chatillon**

**Zhiyong Deng, Jian Zhang**

**Raphaël Duee, Jean-Yves Chavallard**

**Thibaud Le Bourdon, Vincent Martin**

**Kazuki Yamana, Hideki Shibayama, Hiroitsu Suzuki**

**Christophe Langrenne, Pierre-Emile Chartrain, Manuel Melon, Alexandre García**

**Travis Wiens, Paul Behrens**

**Kazuki Yamana, Hideki Shibayama, Hiroitsu Suzuki**

**Christophe Langrenne, Pierre-Emile Chartrain, Manuel Melon, Alexandre García**

**Witold Mihaliski, Jan Radosz**

**Einar Ristroph, Michael C. Black**

**Weidong Li**

**Franck Duchassin, Blaise Gosselin, Claude Chamberland**

**Nikolaus Kawanami, Seiichiro Namba, Osamu Takehira, Hugo Fastl**

**Marc Asselineau, Aline Gaulupeau**

**Nicolas Trompette, Jacques Chatillon**

**Zhiyong Deng, Jian Zhang**

**Raphaël Duee, Jean-Yves Chavallard**

**Thibaud Le Bourdon, Vincent Martin**

**Kazuki Yamana, Hideki Shibayama, Hiroitsu Suzuki**

**Christophe Langrenne, Pierre-Emile Chartrain, Manuel Melon, Alexandre García**

**Witold Mihaliski, Jan Radosz**

**Einar Ristroph, Michael C. Black**

**Weidong Li**

**Franck Duchassin, Blaise Gosselin, Claude Chamberland**

**Nikolaus Kawanami, Seiichiro Namba, Osamu Takehira, Hugo Fastl**

**Marc Asselineau, Aline Gaulupeau**

**Nicolas Trompette, Jacques Chatillon**

**Zhiyong Deng, Jian Zhang**

**Raphaël Duee, Jean-Yves Chavallard**
LOW FREQUENCY NOISE, VIBRATION AND SHOCK

IN09_012 BUILDING VIBRATION GENERATED BY LOW FREQUENCY SOUND FROM BLASTS AND AIRCRAFTS .......................................................... 3458
Finn Lovholt, Karin Rothschild, Christian Madshus, Klaus Tronstad

IN09_643 ON-SITE MEASUREMENT OF LOW FREQUENCY NOISE AND COMPLAINANT’S RESPONSES ............................................. 3467
Hiroshi Sato, Jongsun Ryu, Yukio Imukai, Kenji Kurakata

IN09_693 INDIVIDUAL DIFFERENCES IN LOW-FREQUENCY NOISE PERCEPTION .............................................................................. 3476
Christian Sejer Pedersen, Torsten Marquardt

IN09_272 ANALYSIS OF ANNOYING LOW FREQUENCY NOISE BOILERS-ROOMS .............................................................. 3484
Stanislav Ziaran

IN09_470 VIBRATIONS IMPACT EVALUATION METHOD IN HISTORICAL AND CULTURAL VALUE BUILDINGS DUE TO THE VEHICLE FLOW ............................................................................................................ 3493
Carlos Faria, Simone Kann, Marcel Duardi

IN09_513 WAVELET-BASED DETECTION FOR RATTLE OF RESIDENTIAL HOUSE WINDOWS .................................................. 3502
Natalia Sizov, David Scholl

IN09_608 LABORATORY EXPERIMENT ON VIBRATION AND RATTLE OF LARGE WINDOW INDUCED BY NAVE WAVE BOOMS
Yasuaki Nakamura, Yutaka Doi, Jiro Kaku

IN09_567 N-WAVE PROPAGATION THROUGH FULLY DEVELOPED TURBULENCE: EXPERIMENTAL STUDIES .............................................................................................................................. 3519
Philippe Blanc-Benon, Sebastien Ollivier, Mikhail Averiyanov, Petr Yuldashev, Vera Khoshikhova

METHODOLOGY FOR NOISE CONTROL ENGINEERING EDUCATION

IN09_248 EXPERIENCES IN NOISE CONTROL EDUCATION IN ARCHITECTURE ................................................................. 3527
Zheran Yuksel Can, Luigi Maffei, Catherine Semidor, Jian Kang

IN09_340 METHODOLOGY FOR ACOUSTIC DESIGN EDUCATION IN KYUSHU UNIVERSITY ...................................................... 3537
Akira Omoto, Toshiya Samejima

IN09_561 ACOUSTICS STANDARDS AND NOISE CONTROL ENGINEERING EDUCATION ............................................................. 3543
Xiaojun Qiu, Colin Hansen

IN09_521 IMPROVING UNDERGRADUATE NOISE CONTROL EDUCATION AT BRIGHAM YOUNG UNIVERSITY ................................................. 3552
Kent L. Gee, Scott D. Sommefeldt, Timothy L. Lechman, Brian E. Anderson, Jonathan D. Bloater

IN09_662 VISUAL DEMONSTRATION MATERIALS FOR ACOUSTIC EDUCATION .......................................................... 3559
Karluck Chheng, Seung Hyun Song, Toshiaki Kato, Tetsuya Doi

UNDERWATER NOISE

IN09_868 UNDERWATER SOUND FROM MARINE PILE DRIVING ........................................................................ 3568
James Reyff
IN09.915 ASSESSING THE EFFECTS TO FISH FROM PILE DRIVING: APPLICATION OF NEW HYDROACOUSTIC CRITERIA ..........................3580
John Stadler, David Woodbury

IN09.933 2008 UNDERWATER NOISE SURVEY IN SUPPORT OF PORT OF ANCHORAGE MARINE TERMINAL REDEVELOPMENT PROJECT 3588
Alexander Kulichenko, Jae-Byung Jung, Patrick Simpson, Sheyna Wisdom

IN09.861 UNDERWATER SHIP NOISE EVALUATION BY MEANS OF SOUND INTENSITY METHOD AT THE SHALLOW WATER ..................3597
I-Chun Lin, Ching-Shi Yang, Yein-Rui Hsieh, Hui-Chen Chien, Li-Chung Chou

OUTDOOR SOUND PROPAGATION

IN09.974 SOURCES OF UNCERTAINTY IN GROUND IMPEDANCE MEASUREMENTS AND ESTIMATIONS ..................................................3602
Shahram Taherzadeh

IN09.173 OUTDOOR SOUND PROPAGATION PREDICTION: THE CHALLENGE OF ASSESSING MODEL ACCURACY ..................................................................................................................3610
D. Keith Wilson, Chris Petitt, Matthew Lewis

IN09.125 PARABOLIC EQUATION SOURCE TERM ISSUES AT LOW FREQUENCIES AND LONG DISTANCES ..................................................3619
Michelle E Swearingen, Morten Raveby

IN09.307 COMPUTATIONAL MODEL FOR LONG-RANGE NONLINEAR PROPAGATION OVER URBAN CITIES ..................................................3623
Thomas Leising, Christian Soize, Philippe Jean, Jérôme Defrance

VOLUME 6

IN09.142 EFFECTS OF ATMOSPHERIC ABSORPTION ON OUTDOOR PROPAGATION OF SOUND GENERATED FROM VARIOUS SOURCES ON THE GROUND TO HIGH-RISE BUILDINGS .................................................................3632
Koichi Yoshihisa, Yasuaki Okada, Kenji Tatsuoka, Teruo Iwate

IN09.415 FLUCTUATION OF NOISE ATTENUATION ABOVE DIFFERENT GROUND SURFACES UNDER SIMILAR METEOROLOGICAL CONDITIONS ..................................................................................................................3641
Hiroyuki Imazuumi, Yasumori Takahashi

IN09.763 TERRAIN EFFECT ON LONG RANGE PROPAGATION OF HEAVY WEAPON NOISE ..................................................................................................................3648
Ippei Yamamoto, Hidebumi Tsukikawa, Koichi Makino, Kohei Yamamoto, Ichiro Yamada

IN09.744 METEOROLOGICAL EFFECT ON LONG RANGE PROPAGATION OF HEAVY WEAPON NOISE ..................................................................................................................3656
Koichi Makino, Kohei Yamamoto, Ippei Yamamoto, Hidebumi Tsukikawa, Ichiro Yamada

IN09.720 ATMOSPHERIC TURBULENT SCATTERING OF BROADBAND SOUND ..................................................................................................................3663
Stuart Bradley

IN09.155 ACOUSTIC TOMOGRAPHY OF THE ATMOSPHERIC SURFACE LAYER AT THE BOULDER ATMOSPHERIC OBSERVATORY ..................................................3669
Vladimir Ostashev, Alfred Bedard, Sergey Vecherin, D. Keith Wilson, Jesse Leach, Bruce Bartram, Christopher Fairall, Daniel Wolfe, Jim Jordan, Randall Nishiura

IN09.198 IMAGING THE ATMOSPHERE WITH INFRASOUND ..................................................................................................................3676
László G. Evers

IN09.326 LABORATORY STUDIES ON SONIC CRYSTAL NOISE BARRIERS ..................................................................................................................3685
Alvin Yung Boon Chong, Shahram Taherzadeh, Keith Attenborough

PLENARY

IN09.666 GEAR NOISE: ANATOMY, PREDICTION AND SOLUTIONS ..................................................................................................................3691
Rajendra Singh

PUBLIC SPACE ACOUSTICS

IN09.642 EFFECT OF NOISE AND REVERBERATION ON SOUND LOCALIZATION OF ACOUSTIC GUIDE SIGNAL FOR Visually IMPAIRED PERSONS IN PUBLIC SPACES .................................................................3721
Hiroshi Sato, Masayuki Morimoto, Hayato Sato

IN09.611 FIELD MEASUREMENT AND SUBJECTIVE EVALUATION OF ACOUSTICAL CONDITION OF RAILWAY STATION IN AND AROUND TOKYO ..................................................................................................................3728
Yasuhiro Izumi, Hiroshi Sato, Hayato Sato, Masayuki Morimoto

IN09.206 ACOUSTICAL CHARACTERISTICS IN GROUND AND UNDERGROUND RAILWAY STATION WITH DIFFERENT PLATFORMS ..................................................................................................................3736
Yoshiharu Souza, Ryota Shimokura

IN09.433 PROPOSAL FOR RECOMMENDED VALUES OF NOISE LEVEL FOR INDOOR PUBLIC PLACES IN HOSPITALS AND LIBRARIES OF THE REPUBLIC OF CHINA (TAIWAN) ..................................................................................................................3744
I-Chun Lin, Ching-Shi Yang, Yein-Rai Hsieh, Hui-Chen Chien, Li-Chung Chou
IN09_512 AURALIZATION FOR PUBLIC SPACES ................................................................. 3753
  Jonah Sacks

IN09_217 ON SOUNDSCAPICAL CORRECTNESS: AN ACOUSTIC DESIGN POLICY FOR PUBLIC SPACES ................................................................. 3759
  Koji Nagahata

IN09_468 CALCULATION OF SOUND PROPAGATION AND PREDICTION OF NOISE LEVELS INSIDE ................................................................................................. 3767
  Wolfgang Probst

IN09_921 MASS NOTIFICATION SYSTEM TESTING AND MODELING IN LARGE REVERBERANT SPACES ................................................................. 3772
  Benjamin Seep, David Manley

IN09_531 ULTRASOUND IN THE HOME AND WORKPLACE ......................................................... 3780
  Kimberly Lefkowitz, Robert Bruce, Arno Bonmer

IN09_032 INTERVENTION OF ACOUSTIC CORRECTION TO IMPROVE SPEECH QUALITY OF TWO CONFERENCE HALLS IN A SICILIAN HISTORICAL BUILDING (XVI SEC.) ................................................................. 3786
  Francesco Nocera, Francesco Patania, Antonio Gagliano, Aldo Galesi

IN09_726 MUSIC PERFORMANCE ACOUSTICAL-VERSUS-NOISE PERCEPTION IN TRIESTE MUSICAL CITY ................................................................................. 3795
  Francesco Pollicardi

IN09_434 STAGE ACOUSTICS: EXPERIMENTS ON STAGES OF CONCERT HALLS IN THE NETHERLANDS ................................................................. 3805
  Laurentint Van Luxemburg, Philio Heijnen, Martijn Kivits, Constant Hak

IN09_505 NEW (STAGE) PARAMETER FOR CONDUCTOR'S ACOUSTICS? - PART 2: FURTHER INVESTIGATION ON LQ7-40 ................................................................................. 3813
  Elizabeth W. M. Van Den Broaak, Constant C. J. M. Hak, Laurentint C. J. Van Luxemburg

IN09_302 AUXILIARY EQUIPMENTS: HOW THEY CAN AFFECT HALL'S ACOUSTICAL QUALITY ................................................................................. 3822
  Alessandro Cucchi, Giovanni Sempri

IN09_735 A SYNTHESIZED APERTURE GONIOMETER FOR DIFFUSION COEFFICIENT MEASUREMENTS ................................................................. 3828
  Philip Robinson, Ning Xiang, Peter D'Antonio

IN09_090 A SUGGESTED METHOD TO BE USED TO MEASURE THE SCATTERING COEFFICIENT OF FULLSCALE SAMPLES ................................................................................. 3834
  Ben Sauro, Mike Vargas

IN09_590 INFLUENCE OF THE NUMBERS OF DIFFUSERS AND AIR CAVITY BELOW A TURNTABLE IN RANDOM-INCIDENCE SCATTERING COEFFICIENTS MEASUREMENTS ................................................................................. 3841
  Christian Dos Santos, Stelamaris Rolla Bertoli

IN09_443 ACOUSTIC TRANSMISSION LOSS ESTIMATION METHOD BY IMPACT TESTING ................................................................................. 3850
  Eiichi Nishida, Masashi Hayakawa

IN09_250 FIELD VERSUS LABORATORY SOUND INSULATION OF GLASS FACADES ................................................................................. 3859
  Sigmund Olafsen, Maria Kristin Strand

IN09_710 THE ADAPTATION OF THE FAÇADE SOUND INSULATION REQUIREMENTS IN THE BELGIAN STANDARD ................................................................................. 3867
  Bart Ingelaere, Debbywyats, Manuel Van Damme, Lieven De Geetere

IN09_851 EXCITATION OF WOOD JOIST FLOORS WITH THE STANDARD RUBBER BALL ................................................................................. 3875
  Stefan Schoenwald, Berndt Zeitler, Trevor R. T. Nightingale

IN09_873 SIMPLIFIED METHOD TO ESTIMATE EFFECTIVENESS OF FLOOR TREATMENTS (TOPPINGS AND COVERINGS) ................................................................................. 3884
  Berndt Zeitler, Stefan Schoenwald, Trevor Nightingale, Frances King

IN09_754 REDUCTION OF TONAL NOISE IN LECTURE ROOM AIR CONDITIONING SUPPLY DUCTS ................................................................................. 3893
  Jack B. Evans

IN09_392 CONTROL OF GARAGE EXHAUST FAN NOISE IN MULTI-FAMILY RESIDENTIAL BUILDINGS ................................................................................. 3899
  James Phillips

IN09_265 NOISE FROM ROOFTOP MECHANICAL SYSTEMS IN RESIDENTIAL BUILDINGS ................................................................................. 3907
  Anthony Nash

IN09_904 SOLVING OUTDOOR NOISE ISSUES - BUILDING SYSTEM MECHANICAL EQUIPMENT ................................................................................. 3913
  John Sofra, Tom Paige

IN09_421 COMPARISON OF PREDICTED AND MEASURED STRUCTURE-BORNE SOUND OF AN INDUSTRIAL WASHING MACHINE ON A HEAVY CONCRETE FLOOR ................................................................................. 3921
  Pieter Schevenels, Lieven De Geetere, Bart Ingelaere, Gerrit Vermeir

IN09_223 DYNAMIC NOISE MODELING AT ROUNDABOUTS ................................................................................. 3929
  Joel Lelong, Estelle Chevalier, Ludovic Leclercq, Roger Chatagnon

TESTING OF ARCHITECTURAL SYSTEMS IN THE LAB AND FIELD

IN09_500 INFLUENCE OF THE NUMBERS OF DIFFUSERS AND AIR CAVITY BELOW A TURNTABLE IN RANDOM-INCIDENCE SCATTERING COEFFICIENTS MEASUREMENTS ................................................................................. 3841
  Christian Dos Santos, Stelamaris Rolla Bertoli

IN09_443 ACOUSTIC TRANSMISSION LOSS ESTIMATION METHOD BY IMPACT TESTING ................................................................................. 3850
  Eiichi Nishida, Masashi Hayakawa

IN09_250 FIELD VERSUS LABORATORY SOUND INSULATION OF GLASS FACADES ................................................................................. 3859
  Sigmund Olafsen, Maria Kristin Strand

IN09_710 THE ADAPTATION OF THE FAÇADE SOUND INSULATION REQUIREMENTS IN THE BELGIAN STANDARD ................................................................................. 3867
  Bart Ingelaere, Debbywyats, Manuel Van Damme, Lieven De Geetere

IN09_851 EXCITATION OF WOOD JOIST FLOORS WITH THE STANDARD RUBBER BALL ................................................................................. 3875
  Stefan Schoenwald, Berndt Zeitler, Trevor R. T. Nightingale

IN09_873 SIMPLIFIED METHOD TO ESTIMATE EFFECTIVENESS OF FLOOR TREATMENTS (TOPPINGS AND COVERINGS) ................................................................................. 3884
  Berndt Zeitler, Stefan Schoenwald, Trevor Nightingale, Frances King

BUILDING SYSTEMS AND SERVICES

IN09_223 DYNAMIC NOISE MODELING AT ROUNDABOUTS ................................................................................. 3929
  Joel Lelong, Estelle Chevalier, Ludovic Leclercq, Roger Chatagnon
VEHICLE INTERIOR NOISE

IN09_814 A HEAVY DUTY VEHICLE INTERIOR SOUND REMEDIATION ................................................................. 3961
   Jeongsoo Park, Michael Thomlinson

IN09_540 TRANSFER PATH ANALYSIS AND INTERIOR NOISE ESTIMATION OF THE ROAD NOISE USING MULTI-DIMENSIONAL SPECTRAL ANALYSIS ................................................................. 3967
   Sang-Gil Park, In-Hyoung Yang, Jae-Eun Jung, Jae-Eung Oh, You-Sub Lee

IN09_244 THE INFLUENCE OF PROPAGATION SURFACE FOR INTERIOR SOURCE LOCALIZATION .......................... 3976
   Filip Deblauwe, Karl Janssens, Noah Shirk

IN09_715 IMPLEMENTATION OF A SOUND SOURCE APPROACH INTO THE TRANSFER-MATRIX DESCRIPTION OF DUCT SYSTEMS ........................................................................................................ 3984
   Kai Pies, Stefan Sentpali, Martin Boehle, Manfred Fallen

IN09_312 DESIGN OF QUARTER WAVE TUBE FOR ENGINE INTAKE NOISE ATTENUATION BY FINITE ELEMENT ANALYSIS .......................................................................................................................... 3993
   Wasi Elrashi, Mehmet Caliskan, Ayatil Kayanu, Iker Yilma

IN09_454 PREDICTION OF FORCES ACTING ON A CHASSIS OF A VEHICLE: COMPARISON OF TWO METHODS FOR ESTIMATING THE DISPERSION OF THE RESULTS .............................................. 4001
   Sait Mapagha, Vincent Martin

IN09_450 PREDICTION OF FORCES INDUCED BY AN ACTIVE COMPONENT ON A CHASSIS: APPLICATION TO A POWERED SEAT .................................................................................................................... 4007
   Marie-Hélène Moulet, Oleg Danilov, Vincent Martin

IN09_008 EXTERIOR MIRROR ARM DESIGN OPTIMIZATION TO IMPROVE VIBRATION PERFORMANCE .................. 4016
   Murat Dal, Meri Doganli, Gokmen Polat, Onur Canga, Okan Tandogan, Fulya Tras

SOUNDSCAPE AND COMMUNITY NOISE

IN09_962 TOWARDS SOME STANDARDISATION IN ASSESSING SOUNDSCAPE PREFERENCE ................................. 4023
   A. L. Brown, Jian Kang, Truls Gjestland

IN09_878 URBAN SOUNDSCAPE OF RECREATIONAL AREA IN HONG KONG ....................................................... 4034
   Tracy Yatze Choy, Wai Keung Lui

IN09_740 THE EFFECT OF WATER SOUNDS IN EVALUATION OF URBAN SOUNDSCAPE WITH COMBINED NOISE SOURCES AND THE EFFECT OF WATER SOUNDS ................................................................... 4042
   Jin Youn Jeon, Pyoungh Sik Lee, Jin You, Jian Kang

IN09_707 ANNOTATING SOUNDSCAPES ............................................................................................................. 4047
   Johannes D. Krijnders, Mario Niessen, Teerad Andrtinga

IN09_678 RELATIONSHIP BETWEEN COMMUNITY NOISE ANNOYANCE AND LOCAL CONTEXTS: ANALYSIS OF FREE DESCRIPTIONS FROM A SOUNDSCAPE PERSPECTIVE ............................ 4056
   Kazuya Minoura

IN09_605 THE SOUND OF THE CITY: AURALISATION OF COMMUNITY NOISE DATA ........................................... 4062
   Paul McDonald, Henry Rice, Simon Dobbyn

IN09_453 USING PLANNING GUIDELINES AS A TOOL TO ACHIEVE GOOD SOUNDSCAPES FOR RESIDENTS .......................................................... 4070
   Sigmund Olaften

IN09_049 ENVIRONMENTAL NOISE AND RESIDENTS’ SOCIAL-ECONOMIC PROFILES: A CASE STUDY IN GREATER LONDON ................................................................. 4076
   Hui Xie, Jian Kang

SOUNDSCAPE AND ITS APPLICATIONS

IN09_682 THE CONCEPTS OF SOUNDSCAPE. ARE THERE SHALLOW SOUNDSCAPES AND DEEP SOUNDSCAPES? .............................................................................................................................. 4084
   Kozo Hiramatsu, Kello Torigoe, Daniele Dubois, Brigitte Schulte-Forkcamp

IN09_649 SOUNDSCAPE AND COMMUNITY NOISE - WHERE WE ARE? ................................................................. 4091
   Brigitte Schulte-Forkcamp, Bennett Brooks
NOISE IN HIGH RISE CITIES

IN09_819 PULSE PROPAGATION IN DENSE URBAN TERRAIN ................................................................. 4134
Donald G. Albert, Frank E. Perron, Jr., Gary Koh, Evelyn Boettcher

IN09_387 ACOUSTICAL ANALYSIS METHODOLOGY FOR URBAN ROOFTOP PLAYGROUNDS IN NEW YORK CITY ........................................................................................................ 4141
Benjamin Sachwald, Dan Abatemarco

IN09_859 NOISE MANAGEMENT AND REDUCTION ISSUES IN CITIES ............................................... 4150
Luís Bento-Coelho, Diogo Alarcao

IN09_909 SAAS, THE FUTURE OF URBAN ENVIRONMENTAL NOISE MODELLING .......................... 4157
Simon Shilton, Hartmut Stapelfeldt, Chris Hoar

NOISE MAPS AND ACTION PLANS

IN09_251 ANALYSES OF THE DIRECTIVE 2002/49/EC AND PROPOSALS FOR IMPROVEMENT ........... 4164
Christoph Lechner

IN09_911 NOISE MAPPING AND ACTION PLANNING IN IRELAND UNDER DIRECTIVE 2002/49/EC ........... 4168
Simon Shilton, Tom Stafford

IN09_554 INVESTIGATION ON NOISE POLICY FOR A STRATEGIC NOISE MAPPING ....................... 4175
Young-Min Park, Bong-Suk Kim, Hye-Sang Sun, Nae-Hyun Lee, Young-Jin Shin

IN09_440 PROCEDURES TO ANALYZE NOISE MAPS IN CONNECTION WITH NOISE ACTION PLANS .. 4181
Gert Braunstein, Arne Berndt, Michael Gillé

IN09_467 NOISE MAPPING AROUND AIRPORTS .................................................................................. 4186
Wolfgang Probst, Bernd Huber, Berthold Vogelsang

IN09_348 PRACTICAL ASPECTS OF QA IN NOISE MAPPING .......................................................... 4192
Klaus-Georg Krapf, Edgar Wetzel

IN09_471 GRID COMPUTING IN MODEL SETUP, NOISE CALCULATION AND IMPACT ASSESSMENT ........ 4198
Hardy Stapelfeldt

IN09_437 THE SUSTAINABLE END NOISE MAPPING SOLUTION OF THE GERMAN FEDERAL RAILWAY AUTHORITY, REVIEW TO AN OUTSTANDING PROJECT ........................................... 4204
Michael Gillé, Uwe Jasnoch, Walter Stankewitz

IN09_368 A REVERSE ENGINEERING APPROACH TO GENERATING AND CALIBRATING AN ENVIRONMENTAL NOISE CONTOUR MAP .................................................................................. 4212
Ryan Daneluzzi, Colin Novak, Steve Bogensberger, Mike Dobrin, Helen Ule, Gary Newton

IN09_817 ROAD TRAFFIC NOISE MAPPING FOR ISTANBUL ZINCIRLIKUYU - MASLAK TRANSPORTATION ROUTE ............................................................................................................ 4222
Mine Ascigil, Sevtap Yılmaz-Demirkale

AIRPORT NOISE

IN09_769 REVIEW OF ENVIRONMENTAL MEASURES FOR MITIGATION OF AIRCRAFT NOISE IMPACT IN JAPAN FROM THE VIEWPOINT OF BALANCED APPROACH ......................................................... 4231
Ichiro Yamada, Makoto Morinaga, Michiko So Finegold

IN09_417 BALANCED APPROACH TO AIRCRAFT NOISE MANAGEMENT AT NARITA INTERNATIONAL AIRPORT .................................................................................................................. 4239
Saburo Ogata

IN09_143 UNCERTAINTY AND LEVEL ADJUSTMENTS OF AIRCRAFT NOISE MEASUREMENTS ............. 4247
Rudolf Bütikofer, Georg Thomann

IN09_124 NOISE OPTIMIZATION OF AIRFLIGHT TRACKS BY RECIPROCAL NOISE MAPS ................... 4255
Jan Jabben, Bastiaan Du Pon, Loppo De Vries

IN09_572 EFFECTS OF DATA LOSS DUE TO NOISE CONTAMINATION AND LACK OF MEASUREMENTS ON THE MONITORING OF AIRPORT NOISE ........................................................................ 4263
Ichiro Yamada, Hisashi Yoshinaka, Naoaki Shinohara, Hideohmi Tamaki

IN09_757 CONSIDERATION TO A NEW AIRCRAFT NOISE MONITORING SYSTEM AT NARITA AIRPORT ................................................................................................................................. 4271
Naoaki Shinohara, Miroku Tani, Saburo Ogata
MUSICAL ACOUSTICS.

OPENCAST MINE IN09_054 NOVEL NEURAL NETWORK APPLICATION FOR MACHINERY NOISE PREDICTION IN AN

IN09_003 FSI COMPUTATION FOR TIME DOMAIN ACOUSTIC ANALYSIS

ACOUSTIC ANALYSIS IN09_555 THE SOUND SOURCE MODELING TECHNIQUE OF A GAS ENGINE BY USING INVERSE-

METHOD

IN09_395 CALCULATION OF SOUND TRANSMISSION THROUGH CURVED PLATE USING THE FDTD

TESTS

IN09_469 THE APPLICATION OF A HYBRIDIZED FINITE ELEMENT / FINITE DIFFERENCE TIME

DOMAIN TECHNIQUE FOR THE MODELLING OF SYSTEMS COMMON IN ROOM ACOUSTICS AND

MUSICAL ACOUSTICS...

IN09_569 2D ACOUSTIC WAVE PROPAGATION IN AN ENCLOSED SPACE CONTAINING A BARRIER

USING THE COUPLING BEM+TBEM/MFS

IN09_478 FINITE ELEMENT METHOD FOR PREDICTION OF ACOUSTIC ATTENUATION

PERFORMANCE OF SILENCERS WITH THREE-DIMENSIONAL POTENTIAL FLOW

Zhenlin Ji, Ziqiang Li, Beibei Xu

IN09_436 DEVELOPMENT OF LOW-FREQUENCY FAST MULTIPOLE BEM AND ITS PERFORMANCE

TESTS

IN09_469 THE APPLICATION OF A HYBRIDIZED FINITE ELEMENT / FINITE DIFFERENCE TIME

DOMAIN TECHNIQUE FOR THE MODELLING OF SYSTEMS COMMON IN ROOM ACOUSTICS AND

MUSICAL ACOUSTICS...

IAN DRUMM

IN09_324 MINIMIZING THE SOUND RADIATED BY A CYLINDRICAL SHELL

Micah R. Shepherd, Stephen A. Hambrick

IN09_140 THE EFFECT OF BOUNDARY CONDITIONS ON IN-PLANE DYNAMIC BEHAVIOR OF A

RECTANGULAR PLATE

Jingtai Du, Tiejun Yang, Wen L. Li, Zhigang Liu, Wanyou Li

IN09_179 IN-PLANE FREE VIBRATION OF CIRCULAR ANNULAR ROTATING DISKS

Salem Bashmal, Rama Bhat, Subash Rakheja

IN09_579 LEAST SQUARES METHOD OF FUNDAMENTAL SOLUTIONS FOR ACOUSTIC MODES

ANALYSIS

Der Liang Young

IN09_733 DYNAMIC AND ACOUSTIC RESPONSE OF PERIODIC AND IRREGULAR STIFFENED PLATE

Mejdi Abderrazak, Noureddine Attalla

IN09_395 CALCULATION OF SOUND TRANSMISSION THROUGH CURVED PLATE USING THE FDTD

METHOD

Keichi Murakami, Takashi Aoyama

IN09_555 THE SOUND SOURCE MODELING TECHNIQUE OF A GAS ENGINE BY USING INVERSE-

ACOUSTIC ANALYSIS

IN09_003 FSI COMPUTATION FOR TIME DOMAIN ACOUSTIC ANALYSIS

Shoichi Nakagava

IN09_054 NOVEL NEURAL NETWORK APPLICATION FOR MACHINERY NOISE PREDICTION IN AN

OPENCAST MINE

Debi Prasad Tripathy, Santosh Kumar Nanda, Sarat Kumar Patra

NUMERICAL MODELLING

IN09_756 ACCURACY AND EFFICIENCY OF TIME DOMAIN FINITE ELEMENT METHOD FOR SOUND

FIELD ANALYSIS OF ROOMS

Takeshi Okuzono, Toru Otsubo, Reiji Tomkita, Noriko Okamoto

VOLUME 7
DEVELOPMENTS IN NOISE POLICIES

IN09_760 A STRATEGIC APPROACH ON ENVIRONMENTAL NOISE MANAGEMENT IN DEVELOPING COUNTRIES ........................................................................................................ 4462
Dietrich Schwela, Lawrence S. Finegold

IN09_684 CONTINUING RELEVANCE OF COMMUNITY NOISE CONTROL REQUIREMENTS .............................................................. 4471
Neil Staden

IN09_660 I-ince TSG 3 FINAL REPORT “SURVEY OF LEGISLATION, REGULATIONS, AND GUIDELINES FOR CONTROL OF COMMUNITY NOISE” ........................................................................................................ 4478
Hideki Tachibana, William Long

IN09_657 RESULTS OF A TWINNING PROJECT ON THE IMPLEMENTATION OF THE END IN TURKEY ......................................................... 4486
Yolker K. P. Irmer

IN09_516 ASSESSING THE UNCERTAINTY IN FAA’S NOISE AND EMISSIONS COMPLIANCE MODEL ................................................................. 4490
Rebecca Cointin, George Noel, Doug Allaire, Karen Wilcox, Stuart Jacobson

IN09_102 ENVIRONMENTAL NOISE REGULATIONS IN THAILAND .............................................................................................................. 4500
Kritsika Lertvanawut

IN09_064 NOISE CONSCIOUSNESS WITHIN INDIA: A TEST OF THE MASLOW’S HIERARCHY OF NEEDS HYPOTHESIS ........................................................................................................ 4506
George Luz, Debashis Chakraborty, Vipul Shaha, Koutu Phull

IN09_418 DEVELOPMENT OF AN INDEX FOR TRADEABLE NOISE PERMITS ........................................................................................... 4515
Bastian Figlar, Truls Gjestland

IN09_822 RELEVANCE OF A PUBLIC POLICY FOR ENVIRONMENTAL AND OCCUPATIONAL NOISE CONTROL IN QUEBEC ........................................................................................................ 4524
Richard Martin, Pierre Deshaies, Maude Chapados, Eric Turcotte, Serge Andre Girard, Agathe Croteau, Valerie Leplat, Maurice Poulin, Genevieve Lapointe

IN09_165 LIFETIME EFFECTS OF NOISE IN MODERN SOCIETY .............................................................................................................. 4530
Esko Toppila, Rauno Paakkonen, Ilmari Pyykko

MICROPHONE ARRAYS FOR ACOUSTIC ANALYSIS

IN09_407 ACOUSTIC ANALYSIS BY SPHERICAL MICROPHONE ARRAY WITH OPTIMAL BEAMFORMING ........................................................................................................................ 4539
Boaz Rajafely

IN09_503 NOISE SOURCE IDENTIFICATION ON ROTATING MACHINERY: A NOVEL HEALTH MONITORING APPROACH USING PHASED ARRAYS ......................................................................................... 4544
Efren Fernandez Grande, Finn Jacobsen, Yong-Bin Zhang

IN09_806 SHIELDED MICROPHONE ARRAYS FOR NOISE REDUCTION ........................................................................................................ 4553
Marty Johnson

IN09_350 NOISE SOURCE IDENTIFICATION WITH A SPHERICAL MICROPHONE ARRAY: APPLICATION TO A REALISTIC ENVIRONMENT ........................................................................................................ 4561
Karim Haddad

VISUALIZATION OF NOISE SOURCES AND PROPAGATION

IN09_463 PATCH NEAR-FIELD ACOUSTIC HOLOGRAPHY: THE INFLUENCE OF ACOUSTIC CONTRIBUTIONS FROM OUTSIDE THE SOURCE PATCH ........................................................................................................ 4571
Sébastien Paillasseur, Jean-Hugues Thomas, Jean-Claude Pascal

IN09_918 REGULARIZATION METHOD APPLIED TO THE DETERMINATION OF THE INVERSE FILTER OF REAL-TIME ACOUSTIC HOLOGRAPHY........................................................................................................ 4580
Paweł Castellini, Milena Martarelli

IN09_551 THEORETICAL AND EXPERIMENTAL STUDY ON HOLOGRAPHIC RECONSTRUCTION OF CYCLOSTATIONARY SOUND FIELD ........................................................................................................ 4589
Paolo Castellini, Milena Martarelli

IN09_882 FLOW PRESSURE FLUCTUATION MEASUREMENT BY MEANS OF INTERFEROMETRIC TECHNIQUE COMBINED WITH TOMOGRAPHIC RECONSTRUCTION ........................................................................................................ 4598
Paolo Castellini, Milena Martarelli

IN09_263 VISUALIZATION OF SOUND ENERGY FLOWS ACROSS COUPLED-VOLUME SYSTEMS ................................................................................. 4607
Yun-Jong, Ning Xiang

IN09_060 REAL-LIVE VISUALIZATION OF SOUND INTENSITY STREAM FLOW OVER RECTANGULAR CAVITIES ........................................................................................................................ 4615
Weyna Stefan

IN09_872 INSTRUMENTATION ARCHITECTURE OF THE AERO-ACOUSTIC RESEARCH COMPLEX FOR AIRCRAFT SOURCE NOISE CHARACTERIZATION ........................................................................................................ 4624
Karli Veggeberg

IN09_865 THE IMAGE OF JET NOISE: AN ACOUSTIC APPROACH .......................................................................................................................... 4631
Andrea Sassaroli, Paolo Castellini

IN09_139 EXPERIMENTAL IMPLEMENTATION OF FAR-FIELD ACOUSTIC IMAGING ALGORITHMS USING AN OPTIMIZED RANDON ARRAY ........................................................................................................ 4640
Mongtian R Bai, Kwan-Liang Liu
IN09_448 COMBINED CONTROL OF SOURCES FOR THE ACOUSTIC WAVE FIELD SYNTHESIS
Vincent Martin, Francois Olivier, Antoine Peillot

SUBJECTIVE RESPONSE AND SOUND QUALITY

IN09_881 CONVOLUTION-BASED VIRTUAL CONCERT HALL ACOUSTICS USING AURAL SEGMENTATION AND SELECTION OF MULTICHANNEL IMPULSE RESPONSES
Wieslaw Wozyczky, Дауен Ко, Brett Leonard

IN09_492 ACOUSTIC COMFORT AND ACOUSTIC SILENCE IN CATHOLIC CHURCHES
Menino Tavares, S. Rajagopalan, Satish Sharma, Antonio Carvalho

IN09_712 SOUND QUALITY EVALUATION BY PHYSIOLOGICAL INFORMATION UNDER COMPLEX STIMULI

IN09_370 ADAPTIVE GROUPED PAIRED COMPARISON IN SUBJECTIVE SOUND QUALITY EVALUATION
Kean Chen, Yu Huang, Miao Ma, Na Wang

IN09_700 EXAMINATION OF THE VARIABILITY BETWEEN ARTIFICIAL HEAD RECORDINGS MADE IN DIFFERENT CARS OF THE SAME BRAND AND MODEL
Arne Nykänen, Roger Johnsson, Magnus Löfdahl

IN09_713 MEASUREMENTS OF VARIATIONS IN BINAURAL TRANSFER FUNCTIONS CAUSED BY DISPLACEMENTS OF SOURCES AND RECEIVERS
Magnus Löfdahl, Arne Nykänen, Roger Johnsson

IN09_603 PRODUCT SOUND DESIGN FOR DIVERSE CUSTOMER'S KANSEI
Keichi Ohtomi, Rika Hosaka, Hideyoshi Yangisawa, Tamotsu Murakami

IN09_290 OPTIMUM CONFIGURATION OF INTAKE DUCT SYSTEM INTEGRATING POROUS DUCT FOR PLEASANT INTERIOR NOISE
Takahiro Tsuchida, Yoshiki Aritake, Shigenori Hatano, Senji Kitahara, Hideac Takao, Takeo Hashimoto

IN09_896 CAPTURING DRIVER PROFILES AND BEHAVIOR DURING ON-ROAD ASSESSMENTS OF VEHICLE SOUND QUALITY
Sebastiano Giudice, Louise Humphreys, Paul Jennings, Rebecca Cain, Garry Dunne, Mark Allman-Ward

IN09_364 COMPARISON OF LOUDNESS CALCULATION PROCEDURE RESULTS TO EQUAL LOUDNESS CONTOURS
Jeremy Charbonneau, Colin Novak, Helen Ule

IN09_945 IDENTIFICATION OF PROMINENT DISCRETE TONES (PDTS) NEAR THRESHOLD OF HEARING
Menachem Rafaelof

IN09_848 CONTROLLING AIR-BORNE AND STRUCTURE-BORNE SOUND IN BUILDINGS
J. David Quirt

ACTIVE NOISE AND VIBRATION CONTROL

IN09_665 STUDY ON THE ACTIVE SOUND REDUCTION ON A DIFFRACTED FIELD BY A NOISE BARRIER
Masaki Hasebe, Takeshi Kitajima, Tetsuhiro Chino

IN09_009 A STUDY OF COST FUNCTIONS FOR THE VIRTUAL SOUND BARRIER SYSTEM
Haishan Zou, Xiaojun Qiu, Jing Lu

AIRPORT NOISE

IN09_636 ON AIRCRAFT NOISE AND ITS MONITORING AT TALLINN AIRPORT
Signe Vanker

THE NEED FOR UPDATES TO ACOUSTICAL CRITERIA AND STANDARDS FOR SCHOOLS

IN09_120 THE SOUND ANALYSIS OF THE PC-CLASSROOM BY THE NOISE TO OCCUR FROM A THINCLIENT SERVER
Manabu Ishihara, Shi-Nosuke Suzuki, Jun Shirataki, Kazutaka Itako

IN09_641 SPEECH INTELLIGIBILITY IN CLASS AND ALLEVIATION OF TEACHERS' VOCAL ABUSE BY SOUND FIELD AMPLIFICATION IN ELEMENTARY SCHOOLS
Kiyoshiro Kurita, Kimio Shiraishi, Ryoko Nakamura

IN09_790 ACOUSTICS IN NURSERY INSTITUTIONS FOCUSED ON CHILDREN -PRACTICAL METHODOLOGIES OBSERVING SOUND ENVIRONMENT FROM CHILDREN'S VIEW
Saki Noguchi, Tadashi Komishi, Yasuhiro Oikawa, Yoshio Yamasaki
GREEN/SUSTAINABLE QUIET BUILDING DESIGN

IN09_306 THERMO-ACOUSTIC PROPERTIES OF FLOORS MADE OF CONCRETE AND SCRAPS FROM ELECTRIC WIRES ..............................................................4811
Francesco Asdrubali, Francesco D'Alessandro, Giorgio Baldinelli

SPEECH PRIVACY

IN09_997 ESTIMATION OF MASKING EFFECTS ON SPEECH ACCORDING TO SPECTRAL AND DYNAMICAL CHARACTERISTICS OF MASKERS.........................................................4819
Yoshifumi Hara, Mai Fujiiwara, Yasushi Shimizu, Kazunori Miyoshi

ASSESSMENT OF FLOOR IMPACT SOUNDS

IN09_652 CONTROL OF FLOOR VIBRATION AND NOISE USING MULTIPLE TUNED MASS DAMPERS .................................................................4828
Hongjin Kim, Jae-Seung Hwang, Sang-Hyun Lee

ARCHITECTURAL SYSTEMS IN THE LAB AND FIELD

IN09_663 MEASURING THE SOUND ABSORPTION OF SUSPENDED MATERIAL IN REVERBERATION CHAMBER .................................................................................4837
Hang Kim, Sun-Woo Kim, Jeong-Ryul Kim, Hyeon-Ku Park, Min-Jeong Song

PUBLIC SPACE ACOUSTICS

IN09_490 THE ACOUSTIC PERFORMANCES OF CUCINELLI'S THEATRE: FROM THE DESIGN TO THE TEST MEASUREMENT SESSION .................................................4842
Cinzia Buratti, Elisa Moretti, Marco Vergoni
IN09_638 THE 'MAXXI-CONE': AN ARTISTIC MASTERPIECE FOR OUTDOOR SOUND PROPAGATION .................................................................4849
Lamberto Tronchin
IN09_845 ACOUSTICAL CONDITIONS OF THE KOREAN TRADITIONAL ROYAL PALACE, GYEONGBOKGUNG ........................................4854
Nam-Wook Kim, Min-Joo Lee, Ki-Ryung Lee, So-Yeon Jung, Myung-Jin Kim
IN09_025 SCALE MODEL STUDIES ON SOUND ABSORPTION OF THEATER STAGE OPENING .................................................................4863
Xiang Yan, Chanchun Huang, Xuejun Xu, Xiaoyan Xue, Jianjing Wu
IN09_026 DISCOVER ENIGMATIC ECHO FROM A 960 YEARS OLD DAGOBA IN INNER MONGOLIA .................................................................4868
Xiang Yan, Hailiang Zhang, Deyin Luo, Jianjing Wu

EFFECTS OF NOISE IN COMMUNITIES

IN09_021 A NEW NOISE DESCRIPTOR BASED ON THE AVERAGE EFFECTIVE INFORMATION METHOD .................................................................4872
Zhengyu Ji, Haomou Ji

NOISE MAPS AND ACTION PLANS

IN09_015 NOISE MITIGATION PLANNING IN EASTERN EUROPE ..............................................................................................................................4878
Pálné Bite, Pal Bite, István Dombi

SOUNDSCAPES

IN09_237 THE ENVIRONMENTAL SOUND EVALUATION BY USING A COMPLEXITY OF WAVE SHAPE .................................................................4885
Yoshiaki Makabe, Hideo Shibayama

PREDICTING AND MEASURING AMBIENT NOISE

IN09_940 CHARACTERIZING SOUNDSCAPES USING SPECTROGRAMS FROM LONG-TERM THIRD OCTAVE BAND DATA .................................................................4894
Kenneth Kaliski, Damon Joyce
IN09_411 SIMULATION OF VIBRATION AND SOUND CHARACTERISTICS OCCURRED FROM EXTENDED DECK BRIDGES WITH VARIOUS SKEW DUE TO RUNNING VEHICLE.................................................................5006
Saiji Fukada, Kimihisa Usui, Yasuo Kajikawa, Masahiko Harada

IN09_683 DISTRIBUTED SOURCE ENERGY BOUNDARY POINT METHOD FOR SOLVING HIGH-FREQUENCY ACOUSTIC RADIATION ........................................................................................................5013
Litao Chen, Bingrong Zhang, Yu Gao, Jian Chen, Chuanxing Bi

IN09_001 STRUCTURAL NOISE LEVEL ESTIMATION IN THE HIGH-RISE BUILDING UPPER PREMISES PRODUCED BY ROOF MOUNTED SPIRE OSCILLATIONS .................................................................5018
Ilya Tsukernikov, Igor Shubin, Tatiana Nevenchannaya, Igor Nekrasov, Natalya Shlyurova

OCCUPATIONAL NOISE

IN09_360 PERSONAL AND SITUATIONAL VARIABLES THAT INFLUENCE MP3 PLAYER USER LISTENING HABITS..................................................................................................................5024
Kylie McNeill, Stephen Keith, Katya Feder, David Michaud

RAILWAY NOISE AND VIBRATION

IN09_406 RASPY NOISE INDUCED IN DRY FRICTION BETWEEN A STRAP AND A FIXED PIPE IN TRAIN...................5034
Masayuki Yokoi, Toshio Takahagi, Mikio Nakai

OUTDOOR SOUND PROPAGATION

IN09_631 REDUCTION OF NOISE ON MEASURED AIR TEMPERATURE USING INFORMATION CRITERION .................................................................................................................................5041
Akio Imazawa, Nobuyuki Naoe, Norihisa Matsumoto

SUBJECTIVE RESPONSE AND SOUND QUALITY

IN09_428 PROPOSAL FOR ASSESSMENT OF NOISE IN DWELLINGS FROM BUILDING APPLIANCES .........................5047
Marianna Mirowska

MEASUREMENT AND MODELING METHODS

IN09_422 IMPROVEMENTS IN NOISE MITIGATION OF A POSTAL DELIVERY SERVICE: A COMPARISON AMONG HYBRID, ELECTRIC AND CONVENTIONAL VEHICLES ......................................................5054
Franco Cotana, Andrea Nicolini, Michele Goretti

VEHICLE INTERIOR NOISE

IN09_055 AN INVESTIGATION OF BOOMING NOISE ON A LIGHT COMMERCIAL VEHICLE ........................................5063
Umit Goktepe, Cetin Yilmaz

VIBROACOUSTICS AND VIBRATIONS

IN09_404 THE FLOW-INDUCED VIBRATION OF CYLINDER ARRAYS IN A WATER CROSS FLOW (PART2: EXPERIMENTAL AND NUMERICAL RESULTS) ..................................................................................................................5070
Kazuki Aoyama, Mikio Nakai

Author Index