National Conference on Noise Control Engineering 2014

(Noise-Con 14)

Fort Lauderdale, Florida, USA
8 – 10 September 2014

Volume 1 of 2

ISBN: 978-1-63266-978-0

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Curran Associates, Inc.
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Red Hook, NY 12571

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For permission requests, please contact the Institute of Noise Control Engineering (INCE)
at the address below.

Institute of Noise Control Engineering (INCE)
9100 Purdue Road, Suite 200
Indianapolis, Indiana 46268

Phone: (317) 735-4063

ibo@inceusa.org

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Curran Associates, Inc.
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NoiseCon14 – Technical Sessions
Papers are listed by Technical Session by Day and Order of Presentation

MONDAY – 8 SEPTEMBER 2014

Health Facility Acoustics
10:00 am – Las Olas III

nc14_004 - *A report on updates to the 2014 FGI and sound & vibration guidelines for healthcare facilities*
Kenric Van Wyk, Daniel Horan and Kristen Murphy

nc14_003 - *The relationship between patients and delirium as affected by hospital acoustics*
Robert M. Harari and M.G. Prasad

nc14_006 - *Meeting room sound quality improvement – Quantification of design results*
Bennett Brooks

nc14_005 - *On the need for door gasket systems in patient rooms*
Gregory C. Tocci

nc14_002 - *Structure-borne MRI noise mitigation in a medical office building*
Benjamin Davenny, Gladys Unger and Jeffrey Zapfe

nc14_001 - *A system for verification of the acoustic signal properties of audible medical alarms to the requirements of IEC 60601-1-8*
Jeff G. Schmitt and Michael Schaffer

Building Sound and Impact Isolation
1:00 pm – Las Olas III

nc14_011 - *Analysis of floors for long duration rhythmic exercise activities: Reuse of existing floors and purpose built floors*
Richard Sherren

nc14_016 - *Case study: Vibration isolation of high speed cameras from neighbouring gym vibrations*
Bob Rimrott, Tim Preager and Nicholas Sylvestre-Williams

nc14_017 - *Comparing low frequency impact noise using a tapping machine and heavy/hard impact source on various fitness floor assemblies*
Paul Gartenburg

nc14_020 - *Numerical measurement of sound transmission loss of panel structures*
Gang Wang, Wen L. Li, Jingtao Du and Wanyou Li

nc14_023 - *Comparison of vibration levels and characteristics of cut, floated, and non-isolated floor slabs exposed to ground-borne vibration*
Nathan Bryce Sevener

nc14_010 - *Computer modeling of STC: A summary of options and accuracy*
Daniel M. Horan

Noise Control in Residential and Mixed-Use Buildings
3:20 pm – Las Olas III

nc14_018 - *Blocking sounds: Partition construction, Case studies*
Christopher L. Barnobi, Adam S. Young, Robert D. Bruce, Arno S. Bommer, Edgar Olvera and Issac Harwell

nc14_013 - *Sound isolation and environmental noise assessment of an historic hotel building*
Jeffrey E. Babich

nc14_014 - *Examining laboratory impact insulation data in both short-circuited resilient channel and retrofit ceilings in solid joist floor-ceiling construction*
Wilson Byrick

nc14_015 - *Noise prediction of traffic on freeways and arterials from measured sound data*
John LoVerde, Wayland Dong and Samartha Rawlings

Aerospace Viboacoustics I
10:00 am - Las Olas IV

nc14_047 - *Radiation efficiency measurement techniques of planar structures*
Raef Cherif and Noureddine Atalla

nc14_048 - *Investigating the sound field characteristics in a reverberant room using 2D cross-spectral density measurements*
Olivier Robin, Haisam Osman and Noureddine Atalla

nc14_049 - *Evaluation of turbulent boundary layer noise measurements on an aircraft fuselage*
Tongan Wang and John Maxon

nc14_050 - *Acoustic test results of melamine foam with application to payload fairing acoustic attenuation systems*
William O. Hughes and Anne M. McNelis

nc14_051 - *Results of a test using simulated rotorcraft flyovers designed to compare ratings of rotorcraft noise*
Andrew McMullen and Patricia Davies

Aerospace Vibroacoustics II & Automobile Noise I
1:00 pm – Las Olas IV

nc14_157 - *Transmission loss and absorption of corrugated core sandwich panels with embedded resonators*
Albert R. Allen, Bart F. Zalewski, Bruce N. Rosenthal and Noah H. Schiller

nc14_052 - *An evaluation of the additional acoustic power needed to overcome the effects of a test article's absorption during reverberant chamber acoustic testing of spaceflight hardware*
Aron D. Hozman and William O. Hughes

nc14_053 - *Virtual powertrain swap in vehicle development utilizing a time-domain source-path-receiver model*
Todd Freeman, Pete Jacobsen and Giovanni Rinaldi

Automotive Noise II
3:20 pm - Las Olas IV

nc14_054 - *Visualization of automotive power seat slide motor noise*
Yong Thung Cho and J. Stuart Bolton

nc14_055 - *Auralization of ambient noise in vehicles*
Philipp Grams, Dejan Arsic and John E. Huff Jr

nc14_056 - *Cascading vehicle cab-interior sound targets to insulation requirements*
Richard E. Wentzel

nc14_059 - *A system approach for vibro-acoustic analysis of right-angle gearbox*
Yawen Wang, Junyi Yang, Dong Guo, Guohua Sun and Teik C. Lim

nc14_060 - *Noise reduction on an electrical drive module*
Jason Ley and Zhaohui Sun

nc14_061 - *A holistic approach to the assessment of powertrain induced acoustic phenomena in battery electric vehicles*
Albert Albers, Jan Fischer and Matthias Behrendt

Prediction and Modeling
10:00 am - Bonnett

nc14_093 - *Free vibration of clamped & simply-supported beam carrying concentrated masses with rotary inertia*
Longxin Zhen and Yafeng Wang

nc14_094 - *Application of Fourier spectral element method for the solution of vibroacoustics problems*
Z. Zhang, W. Li and S.T. Raveendra

nc14_095 - *High frequency sound field simulation for multiple sources using local basis representations*
Yangfan Liu and J. Stuart Bolton

nc14_096 - *Effect of signal duration on the sound field in a water-filled waveguide*
Sean D. Kilgallin and Mardi C. Hastings

nc14_097 - *Developing new products for low noise emission - Application of computational fluid dynamics*
Michael J. Lucas

Noise Mapping, Hearing Conservation and Education
1:00 pm - Bonnett

nc14_099 - *Investigation on traffic noise predictions of CadnaA and SoundPLAN using TNM noise prediction model*
Sheying Sun, Neil Morozumi and Richard Patching

nc14_100 - *Assessing all noise sources in one model: Implementation of INM and ECAC 3rd edition in Noise mapping software*
Antonio Notario and Fabian Probst

nc14_101 - *Towards strategic noise mapping of US cities: A noise map for the city of Hartford, CT*
Eoin A. King, Glen Metcalfe, Erik Quitzau and Robert D. Celmer

nc14_102 - *Development of a hearing loss estimation software*
Mingfeng Li, Amanda S. Azman and James K. Thompson

nc14_103 - *Development of a set of structural acoustic teaching demonstrations using a simply-supported plate*
Andrew R. Barnard and Stephen A. Hambric

nc14_104 - *Building on the foundations of acoustics through demonstrations*
Thomas B. Gabrielson

Sources and Propagation
3:20 pm - Bonnett

nc14_105 - *Optimizing the conversion of area and line sources into point source arrays to comply with modeling those sources per ISO 9613-2, Acoustics - Attenuation of sound during propagation outdoors.*
Elden F. Ray

nc14_106 - *Atmospheric effects on noise propagation from an en-route aircraft*
Bao Tong and Kai Ming Li

nc14_108 - *Effect of alternative combinations of source type, sizes, and complexity on accuracy of modeling a power plant*
Marlund E. Hale and Frank Brittain

nc14_107 - *Accuracy of wave based calculation methods compared to ISO 9313-2*
Panos Economou, Frank Brittain and Panagiotis Charalampous

nc14_110 - *Atmospheric absorption effects on the propagation of aircraft noise*
Victor W. Sparrow and Rachel A. Romond

Measurements and Instrumentation I
1:00 pm - Rio Vista

nc14_139 - *Measuring sound absorption coefficient under a synthesized diffuse acoustic field*
Olivier Robin, Alain Berry, Olivier Doutres and Noureddine Atalla

nc14_140 - *Development of a near-field acoustic holography double layer array with reduced sensor count*
Jeong-Woo Kim and Arthur Blanc

nc14_141 - *Automatic detection and rating of squeak and rattle noises in automobiles*
Gil Jun Lee, Unnikrishnan Kuttan Chandrika, Yongjin Kim and Jay Kim

nc14_142 - *Acoustic determination of microphone positions in an impedance tube*
Cameron Fackler and Ning Xiang

nc14_143 - *A time and frequency tool for noise and vibration troubleshooting*
Giovanni Rinaldi, Chris Moon and Bret Engels

nc14_144 - *Alternative method of measuring system loss factor*
Dan R. Stanley

Microperforated and Multifunctional Materials
3:20 pm - Rio Vista

nc14_145 - *Double-leaf sound transmission loss of micro-perforated and porous materials*
Jeong-Woo Kim and Jeffrey M. Mendoza

nc14_146 - *Effect of thermal losses and fluid-structure interaction on the transfer impedance of microperforated films*
Thomas Herdtle and J. Stuart Bolton

nc14_147 - *Design of multi-chamber silencers with microperforated elements*
Seungkyu Lee, J. Stuart Bolton and Paul A. Martinson

nc14_148 - *A tutorial for designing microperforated panel absorbers*
D.W. Herrin, X. Hua and J. Liu

nc14_149 - *Optimization of multi-layer microperforated systems for absorption and transmission loss*
Nicholas N. Kim and J. Stuart Bolton

nc14_150 - *A design parameter for acoustic black holes*
Philip Feurtado and Stephen Conlon

nc14_151 - *Multifunctional structures for concurrent passive vibration control and energy harvesting based on embedded acoustic black holes*
Liuxian Zhao and Fabio Semperlotti

TUESDAY – 9 SEPTEMBER 2014

General Topics in Building Acoustics & HVAC Equipment I
10:00 am - Las Olas III

nc14_007 - *Noise control considerations in ultra green building construction*
Jeanette Hesedahl

nc14_012 - *A multi-criteria method to assess the acoustic quality in museums*
Antonio P.O. Carvalho, Luisa M.M. Garcia and Helder J.S. Goncalves

nc14_021 - *Revised updates to Beranek's room volume to room constant figure*
Jeffrey L. Fullerton

nc14_009 - *Science lab HVAC noise reduction in several phases*
Ben Seep

nc14_008 - *Overview of AHRI standards related to HVAC equipment sound*
Curtis Eichelberger and Paul Bauch

nc14_026 - *AHRI 1280P – A new standard for rating the sound power of water-cooled chillers*
Patrick Marks and Dale Unger

HVAC Equipment II
1:00 pm - Las Olas III

nc14_027 - *Variation over time for reference sound source sound power levels*
Stephen Lind

nc14_028 - *Understanding compressor sound and noise control methods*
Jack Wang

nc14_029 - *A strategy for controlling fan-motor vibration across broad HVAC unit configuration matrices*
Bill Rockwood and Tim Garvin

nc14_032 - *An investigation of HVAC directivity: Theory versus reality*
Tim Wiens, Michael Masschaele, Gordon Reusing and Slavi Grozev

nc14_033 - *HVAC noise prediction and treatment for ships*
Michael Bahtiarian

nc14_034 - *A case study of the new Joe DiMaggio Children's Hospital central energy plant, Fort Lauderdale, Florida*
Edward Dugger

HVAC Equipment III & Renewable Energy Related Noise
3:20 pm - Las Olas III

nc14_035 - *Sound power due to water splashing in a cooling tower*
Steve Marshall

nc14_036 - *The application of experimental statistical energy analysis to an air handler*
Srinivasan Ramalingam and D.W. Herrin

nc14_037 - *Noise and vibration control for HVAC units containing pure tones*
Jerry G. Lilly

nc14_038 - *Application of elastomeric insulation for attenuating compressor piping noise – A design study for offshore installations*
Rajesh Arjunan, Arindam Grosh and Jim Cowling

nc14_039 - *Response to noise generated by wind farms in people living in nearby areas*
Malgorzata Pawleczyk-Luszczynska, Kamil Zaborowski, Adam Dudarewicz, Malgorzata Zamojska-Daniszewska and Malgorzata Waszkowska

nc14_040 - *Wind energy sound monitoring under high shear conditions*
Robert D. O'Neal

nc14_041 - *The Massachusetts research study on wind turbine acoustics – Methods and goals*
Kenneth Kaliski, Eddie Duncan, Peter McPhee, Carol Rowan West, Robert O'Neal, John Zimmerman and Jeff Snyder

Automotive Exhaust Noise
10:00 am - Las Olas IV

nc14_069 - *Improved tuning of the extended concentric tube resonator for wide-band transmission loss*
E. Ramya and M.L. Munjal

nc14_067 - *Prediction of Rasp (non-linear wave propogation) in automotive exhaust systems*
Jim Egan

nc14_068 - *Effect of unequal length of hot end legs on sound quality of vehicle interior noise of V6 engine*
Jaqdish Dholaria, Trent Bogard and Tom Rohm

nc14_066 - *Whistle noise prediction and risk assessment in exhaust silencers*
Jonathan Christian, Jonathan Scott and Syed Quadri

nc14_070 - *Sound engineering - Methods and products in the exhaust system*
Dennis Boennen, Hoi-Jeon Kim and Gerhard Zintel

Automotive Exhaust and Industrial Mufflers
1:00 pm - Las Olas IV

nc14_072 - *A comparative study of the acoustic behavior of porous duct using simulation and testing*
Weiguo Zhang, Mac Lynch, Anneleen Van Gils and Karthik Balachandran

nc14_073 - *Muffler system design simulation using acoustic noise synthesis*
M.G. Prasad and B. Rajavel

nc14_074 - *Notes on the muffler design process*
D.W. Herrin, T. Elnady, Y. Zhang, P. Wang and T.W. Wu

nc14_075 - *Bar silencer analysis using reciprocal work identity and BEM impedance matrix*
L. Zhou, K. Ruan and T.W. Wu

nc14_076 - *Impedance-to-scattering matrix method for silencer analysis*
P. Wang and T.W. Wu

nc14_077 - *Challenges in noise testing of large industrial mufflers*

Edward Green and Matthew Loy

Industrial and Agricultural Equipment Noise
3:20 pm - Las Olas IV

nc14_078 - *Development of a compact intake silencer for a lift truck application*
David A. Hamilton

nc14_079 - *Modeling fan noise with time-domain CFD within the product design cycle*
Karl Washburn, Jingshu Wu, Kevin Horrigan, Franck Perot and Steve Sass

nc14_080 - *Effect of piston secondary motion on engine noise*
Rahul Kale and Jiawei Liu

nc14_081 - *Power generator set – Noise level optimization for cost effective designs*
Shashikant More and Martin Meyers

nc14_082 - *Total noise analysis for containerized power generator*
Jacques Ndione, Patrick Weaver, Robert Powell, Francisco Calvillo and Kevin Horrigan

nc14_083 - *Reduction of gas turbine low frequency sound emission through improved exhaust collector design*
Robert S. Johnson Sr

nc14_084 - *Centrifugal gas compressor sound emissions using noise from vibrations*
Corey Fuzak

Consumer Product and Tire Noise
1:00 pm - Bonnett

nc14_112 - *Noise reduction from shop vacuums by the application of Helmholtz resonator.*
Hoang Le and Corinne Darvennes

nc14_113 - *An enclosed wrapping for reducing blender noise*
M.G. Prasad, Samantha George, Christian Saley and Kevin Winstanley

nc14_114 - *Why buy quiet?*
Charles Hayden and Trudi McCleery

nc14_115 - *Improved model for coupled structural-acoustic modes of tires*
Rui Cao, Nicholas Sakamoto and J. Stuart Bolton

nc14_116 - *New Jersey micro-surface pavement noise evaluation*
John Hencken, Michael Tulanowski, Edwin Hass III and Thomas Bennert

nc14_117 - *Relative calibration and phase matching requirements for tire-pavement noise sound intensity measurement systems*
Paul R. Donavan

Rail and Road Transportation and Infrastructure
3:20 pm - Bonnett

nc14_118 - *The past ten years of tire-pavement noise research*
Tyler Dare

nc14_119 - *Port of Miami tunnel fan noise acoustical assessment*
Bernard Kinney Jr

nc14_121 - *Selecting floating slab track designs for mitigating groundborne vibration from transit systems*
Shankar Rajaram and Hugh Saurenman

nc14_122 - *Acoustic fingerprinting of freight and passenger trains*
Gillian Redman, Kyle Hellewell and Brandon Van Haeren

nc14_123 - *Technical and legal measurements to abate railway noise in Germany*
Rene Weinandy

Measurements and Instrumentation II
10:00 am - Rio Vista

nc14_133 - *An accurate and affordable technique for determining the free-field response of microphones by using acoustical excitation instead of electrostatic actuator*
Valentin Buzduga

nc14_134 - *A proposed correction for incident sound intensity distribution for diffuse field panel excitation and transmission loss simulations*
Kristopher Lynch, Paul Bauch, Stephen Hambric and Andrew Barnard

nc14_135 - *Evaluation of a Jecklin disk for industrial product sound quality work*
David C. Copley and Pravin Sondkar

nc14_136 - *NVLAP acoustical proficiency testing: Historical summary and the future*
Emanuel Mouratidis and Karl K. Harper

nc14_137 - *Soundscape spectrogram with spreadsheet software*
Mark Storm and Christopher Kaiser

nc14_138 - *Designing a short term noise monitoring service*
Douglas Manvell and Greg Bracci

Passive Noise Control – Materials and Measurements
1:00 pm - Rio Vista

nc14_152 - *ASTM E90 transmission loss test aperture upgrade*
Michael Hawn

nc14_153 - *Measurement of the transfer impedance of covers and adhesives with application to multi-layer design*
W.L. Li, James Haylett and D.W. Herrin

nc14_154 - *A survey of methods for determining the bulk properties of sound absorbing materials*
W.L. Li, X. Hua and D.W. Herrin

nc14_155 - *Constrained layer damping for heavy structures with thin, soft viscoelastic materials*
Richard Neville and Nicholas Lee

nc14_156 - *The influence of test fixture damping on the measurement of sound transmission loss*
Charles Moritz, Jennifer Shaw and Armando Carrera

Active Noise and Vibration Control
3:20 pm - Rio Vista

nc14_158 - *A feedback multi-tone algorithm for the control of helicopter gearbox noise in an active headrest*
L. Macchi, J. Caillet, F. Marrot and F. Simon

nc14_159 - *Stability bound of FXLMS algorithm for repetitive impact noise with different durations*
Guohua Sun, Tao Feng, Mingfeng Li, Junyi Yang and Teik C. Lim

nc14_160 - *Fast active noise equalizer based on inverse model LMS algorithm*
Tao Feng, Guohua Sun, Mingfeng Li, Junyi Yang and Teik C. Lim

nc14_161 - *Active control of sound transmission through an aperture in a thin wall*
Ingrid Magnusson, Teresa Pamies and Jordi Romeu

nc14_162 - *Study on active control of the radiated sound power from the cantilever plate*
Mingfeng Li, Junyi Yang and Hugo E. Camargo

nc14_163 - *Simulataing exhaust shell radiated noise using finite element techniques*
Ramana Kappagantu, Jonathan Christian and John George

WEDNESDAY – 10 SEPTEMBER 2014

Community and Construction Noise
10:00 am - Las Olas III

nc14_042 - *Discussion of New York City's new noise code*
Charles Shamoon and Tae Hong Park

nc14_045 - *Aviation noise transmission indoors - Overview of FAA research and assessment of future research needs*
Hua He

nc14_046 - *New American National Standard: Methods for the measurement of noise emissions from high performance military jet aircraft*
Alan T. Wall and Richard L. McKinley

nc14_043 - *Environmental benefits assessment due to the directive 2000/14/EC: Outcomes of a preliminary study*
Salvatore Curcuruto, Delio Atzori, Giuseppe Marsico and Enrico Mazzocchi

nc14_044 - *Issues and recommendations for construction vibration monitoring*
Paul Burge and David Buehler

nc14_120 - *Development and implementation of an underwater construction noise program*
Erich Thalheimer, Jacob Poling and Rob Greene

nc14_172 - *On-land vibration monitoring during bridge construction and demolition*
Patrick Romero

nc14_173 - *Predicting noise from construction of liquefied natural gas import/export facilities*
Scott Noel and Tricia Pellerin

Mining and Industrial Noise
10:00 am - Las Olas IV

nc14_085 - *Noise control in a wood panel production plant - A case study*
Maria Luiza Belderrain, Wanderley Montemurro and Rafael Vaidotas

nc14_086 - *Correlation study on dynamic characteristics of the vane segment from a longwall cutting drum*
Mingfeng Li, Junyi Yang and Hugo E. Camargo

nc14_087 - *A comparison of corded- and badge-type noise dosimeter performance for the mining industry*
John P. Homer

nc14_088 - *Laboratory evaluations of a redesigned collapsible drill steel enclosure to reduce noise from roof bolting machines*
Amanda Azman, Hugo Camargo and Lynn Alcorn

nc14_089 - *Theoretical and practical aspects of noise control at a coal handling plant*
Marek L. Szary, Joseph C. Hirschi and Manoj K. Mohanty

nc14_090 - *Noise control concepts for a longwall cutting drum*
Junyi Yang, Hugo E. Camargo and David S. Yantek

nc14_091 - *A noise control for air carbon arc cutting and gouging*
M. Jenae Lowe and Jessie J. Mechling

nc14_092 - *Underground evaluation of noise controls for LHD's and haul trucks used in underground metal/non-metal mines*
Jeffrey Shawn Peterson, M. Jenae Lowe and David Yantek

IT Equipment Noise
10:00 am - Bonnett

nc14_125 - *Examining measured sound power variances in telecommunications equipment*
Eddie Lam

nc14_126 - *Prediction and identification of the aerodynamic noise source on small axial fan*
Gaku Minorikawa, Wanho Jeon, Taegyun Lim and Hyongi Hong

nc14_127 - *Development of engineering grade HAC qualification method for sound power level determination of IT equipment - Progress and key issues*
Kohei Shimoda, Ikuo Kimizuka and Akio Takanashi

Perception and Effects of Noise
10:00 am - Rio Vista

nc14_165 - *Evaluation of noise in sensitive living quarters aboard floating offshore oil & gas facilities using the SEA method*
Kevin Fowler, Bryce Gardner and Michael Burrill

nc14_166 - *Filling in the "Modulation Gap"*
David Nelson

nc14_167 - *Lessons from a large, international sound quality study*
David Nelson

nc14_168 - *Aircraft dose-response research and relationships for National Park backcountry areas*
Amanda Rapoza, Erika Sudderth and Aaron Hastings

nc14_169 - *Sound quality metrics for transport refrigeration equipment*
Jin Liu

nc14_170 - *The effects of office noise on cognitive performance*
Helena Jahncke

nc14_171 - *A temporally corrected sound pressure level as a new noise metric proposed to develop an improved noise guideline*
Jay Kim