Zhe Cui

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Objective

Obtain a challenging job in the field of acoustic and vibration engineering, design, and analysis that would provide me with a platform to enhance my technical and creative abilities thereby helping the organization in its research and development.

Education

Sep. 1998 – Apr. 2004	Ph.D., Mechanical Engineering, Xi'an Jiaotong University, China
Sep. 1995 – Jul. 1998	M.S., Mechanical Engineering, Xi'an Jiaotong University, China
Sep. 1991 – Jul. 1995	B.S., Mechanical Engineering, Xi'an Jiaotong University, China

Working Experience

Apr. 2006 - Current: Research Scholar under the direction of Professors Andy Seybert and David Herrin at the Dept. of Mechanical Engineering, University of Kentucky. Completed projects for the Vibro-Acoustics Consortium (VAC, www.engr.uky.edu/vac) using numerical simulation, design and measurements.

Sep. 1998 – Apr. 2004: Research assistant, Xi'an Jiaotong University

Current and Past Projects

Vibro-Acoustics Consortium Projects

- **VAC acoustic toolbox Development (2008-)**
  Enhanced the absorbing material and intake/exhaust modeling capabilities of software developed by the University of Kentucky NVH group.
- **Evaluation of acoustic fast multi-pole BEM software (COUSTYX) (2008)**
  Analyzed an engine, engine cover and HVAC plenum to validate the software and compared results with another commercial code.
- **VA-One software overview and demonstration project (2006-)**
  Investigated the sound and vibration characteristics of a number of test cases including an engine cover, transmission housing, construction cab, and engine enclosure. Results were compared to measurements.
- **Prediction of transmission/insertion loss of panels and HVAC systems (2007- 2008)**
  Predicted the transmission loss of flat, curved, and double walled panels with various damping and sound absorption treatments.
- **Measurement and prediction of muffler transmission loss (2006-2007)**
  Measured the transmission loss of a muffler using two-source and two-load methods. The transmission loss was predicted using VIRTUAL.LAB for comparison.
- **Application of Inverse BEM to a running torque transfer case (2007**)
  Utilized inverse boundary element methods to determine the sound power and surface

velocity of a torque transfer case.

- **Calculation of flow resistivity of acoustic materials utilizing measured sound absorption (2006)**
  Calculated flow resistivity of an assortment of acoustic materials from absorption measurements using commercial software and in-house code.

Industrial Projects

- **Modeling and Measuring QJ250 compressor for LG Air-Conditioning Company (2001-2002)**
  Evaluated an air conditioner compressor using both FEM and BEM. Examined structural, acoustic, and coupled modes experimentally and analytically.
- **Design and testing of low noise compressor (EDW110) for Guangzhou Refrigeration Company Ltd (2000-2001)**
  Analyzed dynamic characteristics and radiation sound field of an EDW110 compressor. The noise and vibration were effectively reduced by means of adding damping, isolation, and improving machining precision. This compressor is used in several brands of refrigerators in China.
- **Noise reduction of a large disc saw for MAANSHAN Iron & Steel Company Ltd. (1996-1997)**
  Employed FEM to analyze the dynamic characteristics using ANSYS. A few designs such as metal rubber damping, metal fiber materials, and non-obstructive particle damping were tested to reduce vibration and noise of the saw blade.
- **Internship for Xiaongyue Baohuan Science Company Ltd. (Jun.1998- Sep.1998)**
  Conducted structure design of electroplate liquid waste treatment equipment for an industrial waste water treatment plant.

Specialty

Numerical Acoustics – SEA, FEM and BEM
Acoustics and Structural Dynamics Testing
Exhaust Noise - Modeling and Measurement
Acoustic Materials – Modeling and Measurement

Software Skills

VA-One (AUTOSEA), VIRTUAL.LAB (SYSNOISE), I-DEAS, ANSYS, MATLAB, COUSTYX, Microsoft Office, AUTOCAD

Honors

Excellent Doctoral Candidate Scholarship in Xi'an Jiaotong University, 1998 – 1999
Excellent Graduate Student Scholarship in Xi'an Jiaotong University, 1997 – 1998

Publications

1. D. W. Herrin, Z. Cui and J. Liu, "Predicting insertion loss of large duct systems utilizing the diffuse reciprocity relationship", Noise-Con 2008, Dearborn, Michigan, July 28-31, 2008.
2. Z. Cui and X. Q. Huang, "Structural sound radiation on a reflecting plane by the boundary point method", ASME International Mechanical Engineering Congress and Exposition, NY:

American Society of Mechanical Engineers, Design Engineering Division (Publication) DE, 2001, Vol. 111, pp. 371-375.
3. Z. Cui and X. Q. Huang, “Simulation for sound radiation of structure based on virtual boundary element least square method”, Journal of System Simulation, Vol. 16(10), pp. 2169-2171, 2004.
4. Z. Cui and X. Q. Huang, “Analysis shell structural acoustic radiation using finite element method virtual boundary element method”, Transactions of the Chinese Society of agricultural Engineering, Vol. 19(4), pp. 44-48, 2003.
5. J. M. Ma, Z. Cui, and J. L. Lü, “Experimental research on sound absorption characteristics of metal fiber”, Mechanical Science and Technology, Vol. 19(3), pp. 449-451, 2000.
6. Z. Yan, Z. Cui, and H. L. Chen, “Sound absorbing characteristics about metal fiber material and application research”, Noise and Vibration Control, 5: 32-36, 1999.

References

Available upon request.