Ph.D. with 5 Years of R&D and Industry Work Experience in Acoustics and Vibration

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I am a scientist covering multidisciplinary aspects of Acoustics and Vibration. I graduated in Mechanical Engineering from Veer Surendra Sai University of Technology (formerly known as University College of Engineering, Burla) in 2003 and received M. Tech. in Machine Design from the Indian Institute of Technology, Guwahati in 2006.

Immediately after completing my M.Tech., I was fortunate to receive the prestigious Mari-Curie fellowship to work on a European Union project (http://www.smart-structure.eu/). With this scholarship, I came to Finland to join Technical Research Centre of Finland (VTT) as a **"Research Scientist"** in October 2007.

While I was working at VTT, I joined Aalto University School of Engineering as a fulltime PhD student in December 2008. However, I couldn't make any significant progress in my PhD study due to the workload at VTT. Therefore, I left this institute after the end of my contract, that is, 26th December 2010.

Then, I went to IIT Guwahati and joined as an Assistant Project Engineer in order to get time to make some progress in my PhD study. There, I was able to make a research proposal and then I joined **VJ Coforesoft Pvt. Ltd. (Pune)** as a **Team Leader**, and waited there till the time of getting a scholarship. So, I came to Finland on 22nd May 2013 with a scholarship from Graduate Engineering Mechanics Society of Finland. Fortunately, during that time, Prof. J. N. Reddy (Texas A&M University) joined at Aalto University as a Distinguished Visiting Professor (FiDiPro). So, I started to work with him and Prof. Jukka Tuhkuri towards my PhD study.

I submitted the thesis for pre-examination on **26th of October 2015** and would defend it on **22nd April 2016**. For your information, I will get the degree as a Full Time PhD student since my actual work started in May 2013 and completed by October 2015.

RESEARCH INTERESTS

- Structure-borne sound and vibration
- Active structural acoustics control
- Structural dynamics and vibro-acoustics
- Active noise/vibration control
- Vibrations of sandwich beams and plates

EDUCATION

Ph.D. (defense is on 22nd April 2016), Aalto University School of Engineering, Espoo, Finland.

Study: Studied books related to Noise and Vibration to collect the necessary credit points and of my interest, few of them are, Active Control of Vibration, Sound & Structural Vibration, Active Control of Sound, Structure-Borne Sound, Damping Control of Flexible Structures; and carrying out research on Acoustics and Vibration.

Thesis: Analytical analyses of active control of sound transmission through soft-core sandwich structures and double panel partitions.

- ❖ This work has produced five first author journal publications and two conference papers.

Master of Technology (2004 – 2006), Indian Institute of Technology, Guwahati, India.

Study: Studied books on Mechanical Engineering to collect the necessary credit points and of my interest, few of them are Advanced Engineering Mathematics, Finite Element Method in Engineering, Mechanical Vibrations, Introduction to Composite Material, Industrial Noise Control, Theory of Elasticity, Fracture, Fatigue and Failure Analysis; and carried out research on Sandwich Beam Vibration.

Thesis: Parametric instability regions of a sandwich beam with a soft and magnetorheological elastomer core using higher order theory.

- ❖ This work has produced two journal publications and two conference papers.

Bachelor of Engineering (1999-2003), University of College of Engineering, Burla, India.

Study: Studied books on all aspect of Mechanical Engineering and carried out research on Heat Transfer.

Thesis: Convective temprature distribution in a Box (Sponsered by DST).

WORK EXPERIENCE

Team Leader (April 2012 to April 2013), VJ Coresoft Pvt. Ltd., Pune, India.

Responsibilities: Successfully managed a team of Engineers to solve problems related to sound and vibration of various Automotive Industries using the Noise and Vibration, and Vibro-Acoustics modules of LMS Virtual Lab, and wrote online technical help files for the same.

Project Engineer (August 2011 to February 2012), Indian Institute of Technology, Guwahati, India.

Responsibilities: Helped to build a Virtual Lab for Mechanical Vibration to provide a complete Learning Management System for students to avail the various tools for learning, additional web-resources, video-lectures, animated demonstrations etc.

Research Scientist (October 2007 to December 2010), Technical Research Centre of Finland (VTT), Finland.

Responsibilities: Successfully accomplished to Model, Simulate and Test the Structural Mass Actuators (elastic and magnetic mass actuators) which can reduce vibration of firewall and consequently, reduce the low frequency sound inside the car cabin.

ACADEMIC ACHIVEMENTS

- ➢ Scholarship for PhD study from National Graduate Program in Engineering Mechanics, Finland.
- ➢ Awarded prestigious **Marie Curie Fellowship** by the European Union.

- Submitted an **Invention Disclosure** at VTT which was latter approved.
- Awarded the Ministry of Human Resource Development Govt. of India fellowship during M.Tech.

TEACHING AND LABORATORY ACTIVITIES

- Learning university practices: Teaching assistant on M.Sc. course "Models for Beam, Plate and Shell Structures".
- Seminar talk at the Annual Seminar of the National Graduate Program of Engineering Mechanics, 25th to 26th March 2014.
- Developing a Virtual Lab for Mechanical Vibration at IITG to provide a complete Learning Management System for students to avail the various tools for learning, additional web-resources, video-lectures, animated demonstrations etc.

ORGANISATION OF SCIENTIFIC MEETINGS

- Organizing and coordinating the "68th IIW Annual Assembly and International Conference", Helsinki, Finland, 28th to 3rd July 2015.
- Coordinating the workshop at VTT's office in Tampere during 6th Framework Programme of the European Commission (MRTN-CT-2006-035559).

PROFESSIONAL SERVICES

- Reviewer in Journal of Vibration and Control.
- Reviewer in Journal of Sound and Vibration.
- Reviewer in Journal of Journal of Low Frequency Noise, Vibration and Active Control.
- Reviewer in Noise Control Engineering Journal.

PUBLICATIONS

Note that I have an excellent research experience, both in academia and industry and a strong publication record. I developed my research career by working and collaborating with several research groups especially in Europe during the European Union project. Although my work at VTT is involved an industrial applied project, implying that any publication would be focused on reports and conferences, I still managed to submit several articles in peer-reviewed journals.

SCIENTIFIC PUBLICATIONS IN PEER-REVIEWED INTERNATIONAL JOURNALS

- S. K. Dwivedy, **K. C. Sahu** and S. Babu (2007). Parametric instability regions of three layered soft-cored sandwich beam using higher order theory, *Journal of Sound and Vibration*, 304(1), 326-344.
- S. K. Dwivedy, N. Mahendra and **K. C. Sahu** (2009). Parametric instability regions of a soft and magneto rheological elastomer cored sandwich beam, *Journal of Sound and Vibration*, 325(4), 686-704.
- **K. C. Sahu**, J. Tuhkuri and J. N. Reddy (2015). Active piezoelectric-structure acoustic control of a soft-core sandwich panel using volume velocity and a weighted sum of spatial gradient control metric, *Journal of Vibration and Control* (http://jvc.sagepub.com/content/early/2015/11/10/1077546315616523.full.pdf+html).

- **K. C. Sahu**, J. Tuhkuri and J. N. Reddy (2015). Active attenuation of sound transmission through a soft-core sandwich panel using multiple piezoelectric actuators and Reddy's higher order theory, *Journal of Low Frequency Noise, Vibration and Active Control,* 34 (4), 385-412.

- **K. C. Sahu** and J. Tuhkuri (2015). Active control of sound transmission through a double panel partition using volume velocity and a weighted sum of spatial gradient control metrics, *Noise Control Engineering Journal,* 63 (4), 347-358*.*

- **K. C. Sahu** and J. Tuhkuri (2015). Active structural acoustic control of sound radiation from a soft-core sandwich panel, *Noise Control Engineering Journal,* 63 (5), 396-401.

- **K. C. Sahu**, J. Tuhkuri and J. N. Reddy (2015). Active attenuation of sound transmission through a soft-core sandwich panel into an acoustic enclosure using volume velocity cancellation, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science,* 229(17), 3096-3112.

- **K. C. Sahu** and J. Tuhkuri. Active structural and structural-cavity control of transmitted sound through a double panel partition (Under review *Journal of Low Frequency Noise, Vibration and Active Control*).

RESEARCH REPORT

- Submitted a technical report on "**Structural Actuators for Active Control of Sound Radiation**" at Technical Research Centre of Finland (VTT).

CONFERENCE PROCEEDINGS

- **K. C. Sahu** and S. K. Dwivedy (2005). Parametric instability regions of three layered soft-cored sandwich beam using higher order theory (ISTAM, IIT Khargpur).

- N. Mahendra, **K. C. Sahu** and S. K. Dwivedy (2006). Parametric instability regions of sandwich beams with various softcore and skin materials using higher order theory (ICCMS, IIT Guwahati).

- A. Saarinen, S. Uosukainen, **K. C. Sahu**, H. Nykänen and A. Kelloniemi (2008). Elastic Mass Actuator (based on modeling) concept for sound transmission loss increase of panel like structures (Inter-Noise, Shanghai, China).

- H. Nykänen, S. Uosukainen, A. Saarinen, **K. C. Sahu** (2008). Elastic Mass Actuator (EMA) concept for vibration damping and sound transmission loss increase of panel structures (Engineered Adaptive Structures VI, Montana, USA).

- S. Uosukainen, A. Saarinen, **K. C. Sahu**, H. Nykänen and A. Kelloniemi (2008). Elastic Mass Actuator (based on simulation) concept for sound transmission loss increase of panel like structures (ISMA, Leuven, Belgium).

- **K. C. Sahu**, S. Uosukainen, H. Nykänen and J. Tuhkuri (2010). Active control of sound radiation from a rectangular plate subjected to a line moment and plane wave (Inter-Noise, Lisbon, Portugal).

- **K. C. Sahu** and J. Tuhkuri (2013). Active control of sound transmission through soft-cored sandwich panels using volume velocity cancellation (166th Meeting of the Acoustical Society of America in San Francisco, USA).
- **K. C. Sahu** and J. Tuhkuri (2014). Active structural acoustic control of sound power radiation from a soft-core sandwich panel (Inter-Noise, Melbourne, Australia).

SPECIFIC SKILLS

- **Measurement skills**: Pulse analyzer, Active damping device, Sound level meter, Accelerometer, Shaker etc., LMS Scadas system, Laser scanning vibrometer, Test in semi-anechoic chamber etc.
- **Computer skills**: MATLAB, Mathematica, Solid Edge, LMS Virtual Lab, COMSOL Multiphysics etc.

RESEARCH VISITS AND TRAININGS

- September 2008: Taining course on Advanced Techniques in Applied and Numerical Acoustics, KU Leuven, Belgium.
- December 2010: Advanced training on COMSOL Multiphysics at Troindhem, Norway.
- October 2007: Smart Structure's Workshop, Centro Ricerche Fiat, Torino, Italy.
- February 2008: Smart Structure's Course on Acoustics & Vibration, University of Technology, Budapest, Hungary.
- September 2008: Smart Structure's Workshop, LMS International, Leuven, Belgium.
- December 2008: Smart Structure's Workshop, Catholic University of Leuven, Belgium.
- March 2009: Presentation in knowledge centre days at VTT, Finland.
- June 2009: Smart Structure's Workshop, VTT, Tampere, Finland.
- September 2009: VA one seminar on Vibro-Acoustics (ESI group), VTT, Tampere, Finland.
- December 2009: Smart Structure's Workshop, CNAM, Paris.
- June 2010: Smart Structure's Workshop, KTH, Stockholm, Sweden.

REFERENCES

Prof. Jukka Tuhkuri Department of Mechanical Engineering Aalto University School of Engineering P.O. Box 14300, Finland-00076 Email: jukka.tuhkuri@aalto.fi Phone No.: +358 505680036	**Prof. J. N. Reddy** Finland Distinguished Visiting Professor (FiDiPro) at Aalto University Mechanical Engineering Texas A & M University, College Station, TX 77843-3123, USA Email: jnreddy@tamu.edu Phone No.: +1 9798622417	**Prof. S. K. Dwivedy** Department of Mechanical Engineering Indian Institute of Technology Guwahati Assam – 781039, India E-Mail: dwivedy@iitg.ernet.in Phone No.: +91 3612582670