

## BIO-DATA - Prof. BALRAJ SINGH SAINI

1. **Name** : **BALRAJ SINGH SAINI**
2. **Designation** : **Professor (Mech. Engg.)  
& Placement in-charge**
3. **Department** : **MECHANICAL ENGINEERING**
4. **Date of Birth** : **15.11.1975**
5. **Address for Correspondence** : **Department Mechanical Engineering,  
Punjabi University, Patiala 147 002  
Mobile: 91-9815338282  
E-mail: [placement.brs@gmail.com](mailto:placement.brs@gmail.com)**
6. **Areas of Specialization** : **Surface Engineering, Fatigue, Mechanical  
Vibrations, Gear Design, Automotive  
Design and Development**



### 7. Academic Qualifications:

Sr. No.	Degree Held	Year	Institute/ Univ.	% Marks	Division	Subjects/Area
1	B. Tech.	1997	T.I.E.T. Patiala. (Now Thapar University)	75%	1 <sup>st</sup>	Mechanical Engg.
2	M.E.	2003	T.I.E.T. Patiala. (Now Thapar University)	75.24%	1 <sup>st</sup>	Manufacturing Tech.
3	Ph.D.	2011	Punjabi University, Patiala.	----	-----	Fatigue of PVD coated steels

### 8. Membership of Professional Bodies/Organizations:

- Life Member, *Indian Society for Technical Education (ISTE)*-LM 76688
- Member, Editorial Board, *International Journal of Science Scholars (IJSS)*
- Member, *National Geographic Society*
- Member, *Society of Automotive Engineers (SAE) India*.
- Reviewer of reputed International Journals, viz. (KSME) Journal of Mechanical Science & Technology; (Elsevier) Surface and Coatings Technology.

### 9. Medals/Awards/Honours/Received:



### 10. Scholarships:



## 11. Details of Experience:

S. No.	Name of the Inst./Univ./Employer	Position Held	Period	Major Job Responsibilities and Nature of Experience
1.	Dept. of Mech. Engg., Punjabi Univ., Patiala (Formerly UCOE)	Reader / Associate Professor / Professor	15-07-2011 to Till date	Teaching & Research
2.	Swaraj R&D Complex, Punjab Tractors Ltd., Mohali. (Now: Mahindra Swaraj Tractors)	Engineer / Sr. Engineer – R&D	07-07-1997 to 12-07-2005	Design and development of agricultural tractor parts and tooling.

## 12. Published Work:

- a. Research Papers      i) National = Nil  
   ii) International = 08
- b. Conference/Seminar Presentation = 03
- c. Books  
   i) Books: 01  
   ii) Handbook Chapters: 03

## 13. R & D Projects Completed:

### (a) Industrial:

- Design and development of tooling for sheet metal components of Swaraj 855 tractor
- Design and development of sheet metal and plastic components for Swaraj 744 tractor
- Structural analysis of SML Isuzu NQR Bus
- Forming simulation of Swaraj 978 Fuel Tank
- Structural analysis of Rear Axle of SML Isuzu Bus

### (b) Individual:

- Design and fabrication of sol-gel dip coating machine.
- Design and fabrication of magnetron sputter deposition setup.
- Development and analysis of setup for harvesting energy from mechanical vibrations.
- Synthesis of electrically conductive and optically transparent films for application on silicon solar cells.

## 14. (a) **Invited Talks: 03**

(b) **Conferences Organized: Nil**

(b) **Short Term Courses/ Workshop/Symposium Attended: Nil**

### 15. Ph.D. Students guided/under guidance:

S. No.	Name of the Student	Title of Thesis	Year of Completion
1.	Sushl Kumar	Effect of PVD coating on fatigue performance of some case carburized steels	Registered
2.	Mayank Chhabra	Production and Optimization of Neem Biodiesel	Registered
3.	Harpuneet Singh	A comparative study of hot corrosion resistance of coatings deposited through High Velocity Oxy Fuel and Plasma Spray processes under medical waste incineration environment	Registered
4.	Ghansham Goyal	Enrolled	
5.	Rajiv	Enrolled	
6.	Jobanpreet Singh	Enrolled	

### 16. M. Tech. Students guided/under guidance:

S. No.	Name of the Student	Title of Thesis	Year of Completion
1.	Nitin Goel	Finite element analysis of creep in rotating disc of functionally graded composite	July 2011
2.	Amrinder Singh	Finite element modeling of creep in a functionally graded thick cylinder	Sept. 2011
3.	Harpreet Sharma	Effect of process parameters on friction stir welding of aluminium alloy	Sept. 2011
4.	Jatinder Pal Singh	Synthesis of biodiesel and testing its performance on engine	Dec 2014
5.	Amritpal Singh	Force, stress and fatigue life analysis of automotive connecting rod	July 2015
6.	Jobanpreet Singh	Sputter deposition of metallic thin films on glass substrate	July 2016
7.	Jagmeet Singh	Synthesis and characterization of electrically conductive films for application on photovoltaic cells	Aug 2017
8.	Prerna Gupta	Response analysis of systems subjected to periodic excitation	May 2018

### 17. List of Papers/Courses taught at P.G. and U.G. Level:

(a) **UG (B.Tech.):** Mechanical Vibrations, Dynamics of Machines, Optimization Techniques, Computer Integrated Manufacturing Systems, Computer Aided Design.

(b) **PG (M. Tech./Ph.D.):** Computer Aided Design & Manufacturing, Research Methodology

### 18. Technical Proficiency:

- Design and development of automotive class-A surface sheet metal and plastic components; design, development and testing of proprietary components, viz. lights, switches, wiring harness etc.
- Gear design and reverse engineering of shaping / hob cutters
- Recording and analysis of mechanical vibrations
- Metallographic microphotography and analysis of ferrous alloys

- Fractomicrography and analysis
- Fatigue testing and analysis
- X-ray diffraction analysis for material characterization and residual stress estimation
- Deposition of metallic, ceramic and polymeric coatings through sputtering and sol-gel dip coating
- Device interface and control using serial / parallel ports and open architecture systems, viz. Arduino and Raspberry.

## 19. List of Papers Published

### (a) Journals:

1. Balraj Singh Saini, V.K. Gupta and Ramandeep Ramana (2009), “Experimental rig for testing specimens under bending fatigue”, International Journal of Materials Engineering & Technology, 1 (1), pp. 25-32. (ISSN: 0975-0444).
2. B.S. Saini and V.K. Gupta (2010), “Effect of WC/C PVD coating on fatigue behavior of case carburized SAE8620 steel”, Surface and Coatings Technology, 205 (2), pp. 511–518. (Elsevier, ISSN: 0257-8972, 2015 IF- 2.199).
3. B.S. Saini and V.K. Gupta (2010), “Fracture Surface Topography of SAE 8620 Steel Specimens Subjected to Bending Fatigue”, International Journal of Materials Engineering and Technology, 3 (1), pp. 63-76. (ISSN: 0975-0444).
4. B.S. Saini and V.K. Gupta (2011), “Microstructural characterization of case carburized steels through optical Metallography”, International Journal of Materials Engineering and Technology, 6 (1), pp. 39-50. (ISSN: 0975-0444).
5. B.S. Saini and V.K. Gupta (2011), “Fracture surface characterization through optical fractography”, International Journal of Materials Engineering and Technology, 6 (1), pp. 51-59. (ISSN: 0975-0444).
6. Amrinder Singh, Manish Garg, B. S. Saini and V. K. Gupta (2011), “Modeling Creep in a Functionally Graded Thick Cylinder by Using Finite Element Analysis”, International Journal of Mechanics and Solids, 6 (2), pp. 191-204. (ISSN: 0973-1881).
7. B.S.Saini and V.K.Gupta (2012), “Fatigue crack propagation behaviour of some low alloy steels in case carburized condition”, International Journal of Materials Engineering Innovation, 3 (3-4), pp. 330-339. (Inderscience, ISSN: ISSN online: 1757-2762, ISSN print: 1757-2754).
8. Nitin Goel, Manish Garg, B. S. Saini and V. K. Gupta (2012), “Finite Element Analysis of Creep in a Functionally Graded Rotating Disc”, International Journal of Computer Aided Engineering and Technology, 4 (5), pp. 432-444. (Inderscience, ISSN online: 1757-2665, ISSN print: 1757-2657).

### (b) Books:

S. No.	Title	Authors	Publisher & Year of Publication
1.	Handbook of SAPV Systems (Under review)	Raminder Kaur <b>Balraj Singh Saini</b>	Nova Science Publishers, Inc., Hauppauge, NY 11788, USA, 2018

### (c) Hand Book Chapters:

S. No.	Title	Authors	Publisher and Year of Publication
1.	Book Chapter- “X-RAY DIFFRACTION (XRD)” in Handbook of Modern Coatings Technologies, Vol.2: Characterization of modern coatings (Editor:-Mahmood Aliofkhazraei), Elsevier, (2018): Project URL: <a href="http://booksite.elsevier.com/9780444632401/">http://booksite.elsevier.com/9780444632401/</a> (Under Review)	Raminder Kaur, <b>B. S. Saini</b>	Elsevier, RELX Group

2.	Book Chapter-5: FRUGAL TECHNIQUES FOR DEPOSITING NANOFILMS, in “Advances in Nanotechnology. Volume 20 Series: Nanotechnology Science and Technology” ( <b>Editor:</b> Zacharie Bartul and Jérôme Trenor) ( <b>ISBN: 978-1-53612-902-1</b> )	Raminder Kaur, <b>B. S. Saini</b>	Nova Science Publishers, Inc., Hauppauge, NY 11788, USA, 2017
3.	Book Chapter-15 (PP. 357-387): SURFACE ENGINEERING, in “Comprehensive Guide for Nanocoatings Technology, Volume 1: Deposition and Mechanism Series: Nanotechnology Science and Technology” ( <b>Editor:</b> Mahmood Aliofkhaezai) ( <b>ISBN: 978-1-63482-447-7</b> )	<b>B. S. Saini,</b> V. K. Gupta	Nova Science Publishers, Inc., Hauppauge, NY 11788, USA, 2015

**(BALRAJ SINGH SAINI)**