

## VAISHAL JITENDRA BANKER

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### Research Interests

- CAD/CAM/CAE, Advanced Manufacturing Techniques
- Rapid Prototyping Technologies
- Optimization and Modeling of Processes

### Educational Background

- 2009 – 2013, Bachelor of Engineering in Mechanical Engineering with 8.40 CGPA from Government Engineering College, Bharuch affiliated to Gujarat Technological University (GTU), Gujarat State, India
  - **Project Entitled:** “Control of Overheating of Oil in A Hydraulic Power Pack” at Patidar Machine Tools, Vadodara.
  - **Name of Project Mentor:** Prof. Bhavesh C. Pathak, Assistant Professor
- 2013 - 2015, Master of Engineering in Mechanical Engineering with specialization in CAD/CAM with **9.18 CPI (GTU Gold Medalist)** from Sardar Vallabhbhai Patel Institute of Technology, Vasad affiliated to Gujarat Technological University (GTU), Gujarat State, India
  - **Thesis Entitled:** “Modeling the Wear Properties of Inconel 600 Alloy Using Taguchi Method and Artificial Neural Network.”
  - **Name of Supervisor:** Prof. Jitendra M. Mistry, Assistant Professor

### Professional Work Experience

- Assistant Professor at Mechanical Engineering Department, A D Patel Institute of Technology since 1<sup>st</sup> August 2016 till day.
- Assistant Professor at Mechanical Engineering Department, Neotech Institute of Technology from 1<sup>st</sup> July 2015 to 30<sup>th</sup> July 2016.

### Software Proficiency

- Modeling : AutoCAD 2019, Creo2.1, HyperMesh, FESTO FluidSim
- Analysis : ANSYS 19, MINITAB 19, Design Expert
- Programming : C-language, Matlab 2008
- Manufacturing : MasterCAM, CNCTrain v6
- Office suite & OS : MS-Office 2016, Windows 10

### Journal Publications

1. **Banker, V. J. & Mistry, J. M.,** Friction Force Behavior in Dry Sliding of Inconel 600 Alloy Using Taguchi Method and Regression Analysis, *Applied Mechanics and Materials, Trans Tech Publications, Ltd., 2015, 813-814, 179-184.*

2. **Banker, V. J.;** Mistry, J. M.; Thakor, M. R. & Upadhyay, B. H., Wear Behavior in Dry Sliding of Inconel 600 Alloy Using Taguchi Method and Regression Analysis, *Procedia Technology, Elsevier BV*, **2016**, 23, 383-390
3. **Banker, V. J.;** Patel, D. A. & Mistry, J. M., Effect of Machining Parameters on Cutting Force and Surface Roughness in Milling Machine: A Review, *ADIT Journal of Engineering*, **2016**, 16, 26-31.
4. **Banker, V. J.**, Design of Fin-Tube Heat Exchanger for Control of Overheating In Hydraulic Power Pack, *International Journal for Research in Applied Science and Engineering Technology, International Journal for Research in Applied Science and Engineering Technology (IJRASET)*, **2017**, V, 636-641
5. **Banker, V. J.**, Joshi, H. B. & Patel, M. B Design & Development of Versatile Mixer, *International Journal for Research in Applied Science and Engineering Technology, International Journal for Research in Applied Science and Engineering Technology (IJRASET)*, **2019**, 7, 2145-2150
6. **Banker, V. J.;** Mistry, J. M. & Patel, M. H., Experimental Investigation of Cutting Parameters on Surface Roughness in Hard Turning of AISI 4340 Alloy Steel , *Advanced Engineering Optimization Through Intelligent Techniques, Springer Singapore*, **2019**, 727-737
7. **Banker, V. J. &** Joshi, H. B., Design of Transmission System of Tractor for same Load Carrying Capacity, *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, **2020**, 8, 1126-1131
8. Naik, A. J.; Bhuva, H. V.; Rana, D. B.; Panchal, J. D.; **Banker, V. J.** & Bhatia, S. B., Tensile Strength and Flexural Strength of Components manufactured from Additive Manufacturing – A Review, *International Journal of Engineering Science Invention (IJESI)*, **2020**, 9, 21-26
9. Joshi, R. H.; Patel, J. N.; Patwa, K. M.; Prajapati, S. V.; **Banker, V. J.** & Joshi, H. B., Design and Development of Rotor Profile for Screw Pump – A Review, *International Journal of Engineering Science Invention (IJESI)*, **2020**, 9, 13-19
10. Ansari, M. I.; Badarpura, M. S.; Pandya, P. J.; Prajapati, D. B.; **Banker, V. J.** & Malli, M. R., Design and Development of Cow Dung Stick Manufacturing Machine, *International Journal for Research in Engineering Application & Management, IJREAM Publishing House*, **2020**, 01-03
11. Panicker, A. S.; Naik, M. S.; Makwana, M. K.; Verma, N. A.; **Banker, V. J.** & Soni, S. G., Design and Analysis of a Drilling Fixture, *International Journal for Research in Engineering Application & Management, IJREAM Publishing House*, **2020**, 56-60
12. Naik, A. J.; Bhuva, H. V.; Rana, D. B.; Panchal, J. D.; **Banker, V. J.** & Bhatia, S. B., Parameteric Optimization of Tensile strength and Flexural Strength in 3-D Printed components, *ADBU-Journal of Engineering Technology*, **2021**, 10 1-6

### Conference Proceedings and Publications

1. **Banker, V. J. &** Mistry, J. M., Wear Mode in Inconel Alloys - A Literature Study, *International Conference on Advances in Materials and Product Design (AMPD-2015)*, **2015**, 141-147

2. Sagar, A. G.; **Banker, V. J.** & Mistry, J. M., Experimental Investigation of Effect of Graphite as reinforcing element on Cutting Force in Drilling of Al<sub>2</sub>O<sub>3</sub> Reinforced Metal Matrix Composites, *National Conference on Design, Analysis and Optimization in Mechanical Engineering (DAOME-2016)*, **2016**, 148-152
3. Joshi, A. Y.; Joshi, U. A. & **Banker, V. J.**, Experimental Investigation of Adding Various Additives and Binders in Dry Sand Moulding By Taguchi's Method, *National Conference in Advances in Materials and Product Design (AMPD-2017)*, **2017**, 229-234
4. **Banker, V. J.** & Joshi, A. Y., Advances in Hybrid Electric Vehicles and Their Technologies-A review, *22nd ISTE State Annual Faculty Convention and National Conference on theme "Engineering Innovations for Social and Environmental Development"*, **2017**, 121-124
5. Patel, D. A.; **Banker, V. J.**; Mistry, J. M. & Upadhyay, B. H., Experimental Optimization of Cutting Force and Surface Roughness of AISI 304 Stainless Steel in End Milling Process, *Parul University International Conference on Engineering & Technology (PiCET-2018)*, **2018**, 101-106
6. Joshi, A. Y., Bhatia, S. B., **Banker, V. J.**, Prediction of Surface Roughness in Machining of Titanium Alloy (Ti6Al4V) using Artificial Neural Networks, *Second International Conference on Research and Innovations in Science, Engineering & Technology ICRISSET-2020*
7. Panchal, P. H., Mistry, J. M., **Banker, V. J.**, Joshi, D. R., Upadhyay, B. H., A Review on Abrasive Water Jet Machining (AWJM) of Aluminium Matrix Composites (AMCs), *Second International Conference on Research and Innovations in Science, Engineering & Technology ICRISSET-2020*
8. Joshi, A. Y., **Banker, V. J.**, Patel, K. K., Patel, K. S., Joshi, D. M., Purohit, M. R., Experimental Investigation in Wire-Cut EDM of Inconel 718 Superalloy, 2<sup>nd</sup> International Conference on Recent Advances in Manufacturing, SVNIT Surat (Paper Accepted)
9. **Banker, V. J.**, Bhatia, S. B., Joshi, A. Y., Lakdawala, D. K., Malavia, J. K., Padhiyar, H. G., Sisodiya, H. N., Development & Cost Analysis of Aligners for Orthodontics using FDM and DLP, 2<sup>nd</sup> International Conference on Recent Advances in Manufacturing, SVNIT Surat
10. **Banker, V. J.**, Joshi, A. Y., Bhatia, S. B., Optimization of Surface Roughness in Wire Cut Electric Discharge Machining of Ti6Al4V Alloy using Taguchi Method and ANOVA, International Conference on Advanced Engineering Optimization Through Intelligent Techniques (AEOTIT), SVNIT Surat

### Research Grant Received

<b>Title of Project</b>	: "Design of PLC Based Fixture for Drilling Machines"
<b>Funded By</b>	: Student Startup and Innovation Policy, Gujarat (SSIP)
<b>Amount</b>	: Rs. 5,000/-
<b>Student Leader</b>	: Mr. Mohit Naik
<b>Faculty Mentor</b>	: Prof. V. J. Banker

## Projects Guided at Under Graduate Level

### 2017-18

- Experimental Investigation of Cutting Parameter on Surface Roughness and Tool Wear for Turning of AISI 4340 Hardened Steel
- Temperature Measurement and Power Consumption During Processing on Lathe Using Different Materials

### 2018-19

- Design and Analysis of a Hydrostatic Bearing
- Design and Analysis of Variable Angle Welding Fixture
- Minimization of Casting Defects
- Optimization of Plant Layout in Oswal Machinery
- Design for forward and reverse module for tractor transmission for the same load carrying capacity
- Optimization of internal defects in open die forged component
- Profile Generation for twin screw vacuum pump with conical shape
- Evaluating effect of Cryogenic Treatment on Performance of Automotive Components

### 2019-20

- Cow Dung Stick Manufacturing Machine
- Autonomous Sewer Cleaning System
- Material Handling and Inventory Management in Anupam Industries Limited
- Part Build Optimization in Rapid Manufacturing
- Development of Manual Controlled Electric Operated Rover for Agriculture Purpose
- Design of PLC Based Fixture for Drilling Machines
- Design of profile of screw pump

### 2020-21

- Development of aligners for orthodontics using Fused Deposition Modeling
- Topology optimization of parts manufactured by Additive Manufacturing
- Development of Crowns in Dentistry using Fused Deposition Modelling
- Investigation of surface roughness and various cutting parameters in machining of Inconel alloys
- Experimental Investigation in Machining of Inconel 718 and Ti6Al4V by WEDM

## Certifications

1. **NPTEL Online Certification** on “Product Design and Development” completed with Elite Certificate which was conducted by Prof. Indradeep Singh of *IIT-Roorkee (Feb-Mar 2017)*.
2. **NPTEL Online Certification** on “Introduction to Research” completed with Elite Certificate which was conducted by Prof. Prathap Haridoss of *IIT-Madras (Jul-Sep 2017)*.
3. **NPTEL Online Certification** on “Design for Quality, Manufacturing and Assembly” conducted by *IIT-Madras* (8 Week NPTEL NOC Course on “Design for Quality, Manufacturing and Assembly” conducted by IIT-Madras equivalent to 1 Week FDP as

per the circular of AICTE dated on 24/07/2018 (AICTE/RFID/FDP through MOOCs/2017-18)

4. **Specialization Certification in Digital Manufacturing and Design Technology** by University at Buffalo and The State University of New York offered through Coursera..
5. **Certificate in Autodesk Fusin 360: Integrated CAD/CAM/CAE** authorized by Autodesk and offered through Coursera.
6. **Certificate in 3D Printing: Applications** authorized by University at Illinois and offered through Coursera.

#### Seminar/Symposium/Workshops/Conferences Attended

1. **International Conference** on Advances in Materials and Product Design (AMPD-2015) from 10/01/2015 to 11/01/2015 at Sardar Vallabhbhai Patel Institute of Technology, Surat, Gujarat.
2. **International Conference** on Mechanical and Manufacturing Engineering (ICMME-2015) from 02/04/2015 to 03/04/2015 at SCSVMV University, Tamil Nadu.
3. **International Conference** on Innovations in Automation and Mechatronics engineering (ICIAME-2016) from 05/02/2016 to 04/06/2016 at G H Patel College of Engineering and Technology, Anand.
4. **Symposium** held by GTU-IISc Bangalore on "Role of Design in Make in India & Start-up India" on 9<sup>th</sup> April 2016.
5. **Induction Training Program (ITP)** organized on Teaching 22<sup>nd</sup> October 2016 by Gujarat Technological University.
6. **National Conference** on Advances in Materials and Product Design (AMPD-2017) from 10/03/2017 to 11/03/2017 at Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat.
7. **Training Program** of Hypermesh on 21<sup>st</sup> and 22<sup>nd</sup> June 2017 held by Mechanical Engineering Department at A D Patel Institute of Technology, Gujarat.
8. **Faculty Development Program (FDP)** on Design Engineering on 15<sup>th</sup> July 2017 organized by A D Patel Institute of Technology, Gujarat.
9. **Workshop** on "Structural Stability in Air Cooled Condensers" organized by Parul University on 23<sup>rd</sup> September 2017 at A D Patel Institute of Technology, Gujarat.
10. **National Conference** on theme "Engineering Innovations for Social and Environmental Development" on 30<sup>th</sup> December 2017 at A D Patel Institute of Technology, Gujarat.
11. **National Workshop** on "Computational Fluid Dynamics" organized by ADIT during 24<sup>th</sup> – 26<sup>th</sup> October 2018.
12. **FDP** on "Recent trends on Automobile Engineering" organized by ADIT during 4<sup>th</sup> – 9<sup>th</sup> February 2019.
13. **STTP** on Additive Manufacturing - Theory and Applications organized by Department of Mechanical Engineering, S. V. National Institute of Technology, Surat during 10<sup>th</sup> to 14<sup>th</sup> June 2019.
14. **FDP** on "3D Printing & Design" Indian Institute of Information Technology, Design and Manufacturing Kurnool, 19<sup>th</sup> - 23<sup>rd</sup> October 2020
15. **International Conference** on Recent Advances in Manufacturing from 10/06/2021 to 12/06/2021 at Sardar Vallabhbhai Patel Institute of Technology, Surat, Gujarat.
16. **FDP** on "Advances in Manufacturing" organized by Department of Mechanical Engineering, S. V. National Institute of Technology, Surat during 26<sup>th</sup> to 30<sup>th</sup> July 2021.

17. **Faculty Development Programme** on "MATLAB Programming for Additive Manufacturing and 3D Printing (MPAM)" jointly organized by the Electronics and ICT Academies at IIT Guwahati, MNIT Jaipur, NIT Patna and PDPM IITDM Jabalpur, September 20 to October 1, 2021
18. **FDP** on "Additive Manufacturing: Lab Scale to Field Scale", Indian Institute of Technology Palakkad, 13<sup>th</sup> to 17<sup>th</sup> December 2021.
19. **International Conference** on Advanced Engineering Optimization Through Intelligent Techniques (AEOTIT) from 28/01/2022 to 30/01/2022 at Sardar Vallabhbhai Patel Institute of Technology, Surat, Gujarat.

### Summer Internships

- (i) Patidar Machine Tools, Makarpura G.I.D.C Vadodara. Leading manufacturers of plastic injection molding Machines and hydraulic equipments. (14 Days)
- (ii) Adani Power Limited, Mundra SEZ, Kutch. Six 330 MW coal based power plants, Three 660 MW plants. Super critical boilers of operating pressures at 450 bar.(7 Days)
- (iii) PSL Limited, Varsana, Anjar, Kutch. Manufacturers of SAW pipes for leading corporations like L & T, NTPC, SAIL etc. (7 Days)

### Courses Taught

- At A D Patel Institute of Technology
  - Elements of Mechanical Engineering
  - Engineering Graphics and Design
  - Engineering Graphics
  - Engineering Workshop
  - Kinematics of Machines
  - Manufacturing Processes-I and II
  - Entrepreneurship
  - Design Engineering – II A , II B
  - Quality Engineering
  - Disaster Management
  - Effective Technical Communication
  - Computer Aided Manufacturing
  - Oil Hydraulics & Pneumatics
- At Neotech Institute of Technology
  - Machine Design and Industrial Drafting
  - Design of Machine Elements
  - Dynamics of Machinery

### Academic & Administrative Duties

- At A D Patel Institute of Technology
  - NAAC Team Member
  - NBA Accreditation Team Member for Criteria 3 Mapping of Course Outcomes with Program Outcomes
  - Course Coordinator for Engineering Graphics and Design, Manufacturing Processes-II, Entrepreneurship, Quality Engineering and Disaster Management, ADIT
  - RMS Coordinator for attendance monitoring along with Prof. Bala Dutt, ADIT

- Faculty coordinator for the event of “Poster Presentation” for Spectrum ’17, “Mech-Arena” for Spectrum ’17
- Faculty Coordinator for the event “Arrowstotle” for Spectrum ’19
- Committee Member for 1 Day Workshop on Pinch technology organized by Mechanical Engineering Department, ADIT
- Committee Member for 1 Day Workshop on “ANN” organized by Mechanical Engineering Department, ADIT
- Carried out various Industrial Visits for the students across various domains of Manufacturing and Design.
- At Neotech Institute of Technology
  - Subject Coordinator and Laboratory In-charge in Design of Machine Elements and Dynamics of Machines, Neotech Institute of Technology
  - Student and Attendance coordinator for 5th-6th Semester students in year 2015-2016, Neotech Institute of Technology

### Academic and Extra-Curricular Achievements

1. 1st position at G.T.U in M.E (CAD/CAM) in year 2015.
2. 1st position in GTU examination for 1<sup>st</sup> Semester conducted in Winter-2013.
3. 1st position in GTU M.E CAD/CAM for all the three semesters.
4. Participated in the event of Hydroblitz held at SVNIT, Surat. Made a water-bot and represented my college.
5. Stood 3<sup>rd</sup> in Bournvita Quiz Contest at School level.
6. Received merit certificates in various aptitude tests at school level.

### Member of Professional Societies

- ISTE (Life Member LM:119156)
- SAE India (Annual Membership)
- GTU Alumni Association (Life Member: M002516)

### Personal Profile

- Date of Birth : 20.12.1991
- Blood Group : B+ve
- Gender : Male
- Passport No. : M3813504
- Marital status : Married
- Languages Known : English, Gujarati and Hindi
- Hobbies : Reading Novels, Playing Cricket and Chess
- Personal traits : Creative, Logical, Problem Solving ability, Co-operative

### Declaration

- I solemnly hereby declare that the above information furnished by me is true to the best of my knowledge & belief.
- I understand that in the event of any information being found false, incorrect or ineligible before or after the test/interview may candidature applied moment for the applied post is liable to be cancelled/rejected at any stage without prior notice to me as a breach of trust.

**DATE** :

**PLACE : VADODARA**

**(Vaishal J. Banker)**