

Department of Mechanical Engineering Indian Institute of Technology Guwahati



Dr. Satyajit Panda

Professor

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Education:

Ph. D. (2009) Department of Mechanical Engineering, Indian Institute of Technology, Kharagpur, India.

M. E. (2005) Department of Mechanical Engineering, Jadavpur University, Kolkata, India.

B. E. (2003) Department of Mechanical Engineering, Jadavpur University, Kolkata, India.

Research interests:

- Composite materials and structures
- Functionally graded materials and structures
- Smart materials and structures
- Micromechanics of composite materials
- Active and/or passive control of structural vibration
- Nonlinear dynamics and control of structures
- Finite element method

UG/PG courses taught at IITG:

- Solid Mechanics-I (ME 212)
- Solid Mechanics-II (ME 221)
- Dynamics of Machinery (ME 313)
- Design of Machine Elements (ME 314)
- Control Systems (ME 325)
- Modern Control (ME 644)
- Engineering Mechanics (ME 101)
- Engineering Drawing (CE 101)
- Strength of Materials Laboratory (ME 216)
- Theory of Machine Laboratory (ME 315)
- Workshop (ME 110)

Sponsored project/consultancy:

- Development of a viscoelastic quasi-zero-stiffness mechanism using graphite particles/graphene filled rubber composites for low-frequency vibration isolation. Funding agency: SERB, DST; PI: Dr. Satyajit Panda, Co-PI: Dr. S. Kanagaraj; Status: Ongoing.
- Development of a reduced-basis numerical continuation method. Funding agency: SERB, DST; PI: Dr. Satyajit Panda; Status: Ongoing.
- Development of a composite constrained layer damping tape. Funding agency: DSIR, DST; PI: Dr. Satyajit Panda, Status: Ongoing.
- Development of low-frequency vibration isolator for marine applications. Funding agency: NPOL, DRDO; PI: Dr. Satyajit Panda, Co-PI: Dr. S. Kanagaraj; Status: Ongoing.
- Development of a constrained viscoelastic composite tape. Funding agency: NEWGEN IEDC; Project mentor: Dr. Satyajit Panda, Investigator: Mr. Nitin Kumar and Mr. Rahul Kumar; Status: Ongoing.
- Prototype development of a ring vibration isolator equipped with constrained layer damping. Funding agency: NEWGEN IEDC; Project mentor: Dr. Satyajit Panda, Investigator: Mr. Rahul Kumar and Mr. V. V. Sarnaik; Status: Ongoing.
- Active control of harmonically excited nonlinear vibrations of functionally graded cylindrical shells using PFRC constrained layer damping treatment. Funding agency: SERB, DST; PI: Dr. Satyajit Panda; Status: Completed.
- Smart damping of geometrically nonlinear vibration of functionally graded panels under thermal environment using piezoelectric fibre reinforced composites. Funding: IIT Guwahati; Investigator: Dr. Satyajit Panda; Status: Completed.

Articles in international journals:

- (37) Reddy R.S., Panda, S. and Gupta A. (2021) Nonlinear dynamics and active control of smart beams using shear/extensional mode piezoelectric actuators. *International Journal of Mechanical Sciences*, 204:106495
- (36) Gupta A, Panda S and Reddy R.S. (2021) Passive control of parametric instability of layered beams using graphite particle-filled viscoelastic damping layers. *Mechanics of Advanced Materials and Structures*, DOI: 10.1080/15376494.2021.1916136.
- (35) Gupta A, Panda S and Reddy R.S. (2021) Shear actuation-based hybrid damping treatment of sandwich structures using a graphite particle-filled viscoelastic layer. *Journal of Intelligent Material Systems and Structures*, DOI: 10.1177/1045389X211002649.
- (34) Gupta, A. and Panda, S. (2021) Hybrid damping treatment of a layered beam using a particle-filled viscoelastic composite layer. *Composite Structures*, 262:113623.
- (33) Gupta, A., Panda, S. and Reddy, R.S. (2020) Improved damping in sandwich beams through the inclusion of dispersed graphite particles within the viscoelastic core. *Composite Structures*, 247:112424.
- (32) Gupta, A., Panda, S. and Reddy, R.S. (2020) An actively constrained viscoelastic layer with the inclusion of dispersed graphite particles for control of plate vibration. *Journal of Vibration and Control*, DOI: 10.1177/1077546320956533.
- (31) Reddy RS, Panda S and Gupta A (2020) Nonlinear dynamics of an inclined FG pipe conveying pulsatile hot fluid. *International Journal of Non-Linear*

Mechanics, 118:103276.

- (30) Reddy RS, Panda S and Natarajan G (2019). Nonlinear dynamics of functionally graded pipes conveying hot fluid. *Nonlinear Dynamics*, 99(3): 1989-2010.
- (29) Dubey MK and Panda Satyajit (2019) Shear actuation mechanism and shear-based actuation capability of an obliquely reinforced PFC in active control of annular plates. *Journal of Intelligent Material Systems and Structures*, 30(16): 2447-2463.
- (28) Dubey MK and Panda S (2019) Shear-based vibration control of annular sandwich plates using different piezoelectric fiber composites: A comparative study. *Journal of Sandwich Structures & Materials*, 23(2): 405-435.
- (27) Panda Satyajit and Dubey MK (2019) A balanced laminate of piezoelectric fiber composite for improved shear piezoelectric actuation of beams. *Mechanics of Advanced Materials and Structures*, 27(15): 1291-1303.
- (26) Dubey MK and Panda Satyajit (2018) Electromechanical properties and actuation capability of an extension mode piezoelectric fiber composite actuator with cylindrically periodic microstructure. *Archive of Applied Mechanics*, 88(12):2261-2281.
- (25) Panda Satyajit and Kumar Ambesh (2018) A design of active constrained layer damping treatment for vibration control of circular cylindrical shell structure. *Journal of Vibration and Control*, 24(24):5811-5841.
- (24) Kumar A, Panda Satyajit, Narsaria V and Kumar A (2018) Augmented constrained layer damping in plates through the optimal design of a 0-3 viscoelastic composite layer. *Journal of Vibration and Control*, 24(23):5514-5524.
- (23) Kumar A, Panda, S, Kumar A and Narsaria V (2018). Performance of a graphite wafer-reinforced viscoelastic composite layer for active-passive damping of plate vibration. *Composite Structures*, 186:303-314.
- (22) Kumar A and Panda Satyajit (2017) Optimal Damping in Circular Cylindrical Sandwich Shells With a Three-Layered Viscoelastic Composite Core. *ASME Journal of Vibration and Acoustics* 139(6):061003.
- (21) Kumar ASP, Panda Satyajit and Reddy NH (2017) A comparative study on the smart damping capabilities of cylindrically orthotropic piezoelectric fiber-reinforced composite actuators in vibration control of simply supported/fully clamped isotropic annular plate. *Journal of Intelligent Material Systems and Structures*, 28(13):1839-1859.
- (20) Panda Satyajit (2016) Performance of a short piezoelectric fiber-reinforced composite actuator in vibration control of functionally graded circular cylindrical shell. *Journal of Intelligent Material Systems and Structures*, 27(20): 2774-2794.
- (19) Kumar A and Panda Satyajit (2016) Design of a 1-3 viscoelastic composite layer for improved free/constrained layer passive damping treatment of structural vibration. *Composites Part B: Engineering* 96: 204-214.
- (18) Kumar AMS, Panda Satyajit, Kumar S and Chakraborty D (2015) A design of laminated composite plates using graded orthotropic fiber-reinforced composite plies. *Composites Part B: Engineering* 79: 476-493.
- (17) Kumar ASP, Panda Satyajit and Reddy NH (2015) Smart damping of vibration of annular plates through the design of a cylindrically orthotropic piezoelectric fiber-reinforced composite actuator. *Acta Mechanica* 226: 3151-3176.
- (16) Panda Satyajit, Reddy NH and Kumar ASP (2015) Design and finite element analysis of a short piezoelectric fiber-reinforced composite actuator. *Archive of Applied Mechanics*

85: 691–711.

- (15) Kumar AMS, Panda Satyajit and Chakraborty D (2015) Design and analysis of a smart graded fiber-reinforced composite laminated plate. *Composite Structures* 124: 176-195.
- (14) Kumar AMS, Panda Satyajit and Chakraborty D (2015) Harmonically excited nonlinear vibration of heated functionally graded plates integrated with piezoelectric composite actuator. *Journal of Intelligent Material Systems and Structures* 26: 931-951.
- (13) Panda SP and Panda Satyajit (2015) Micromechanical finite element analysis of effective properties of a unidirectional short piezoelectric fiber reinforced composite. *International Journal of Mechanics and Materials in Design* 11: 41-57.
- (12) Kumar AMS, Panda Satyajit and Chakraborty D (2016) Piezo-viscoelastically damped nonlinear frequency response of functionally graded plates with a heated plate-surface. *Journal of Vibration and Control*, 22(2): 320-343.
- (11) Kadam PA and Panda Satyajit (2014) Nonlinear analysis of an imperfect radially graded annular plate with a heated edge. *International Journal of Mechanics and Materials in Design* 10: 281-304.
- (10) Panda Satyajit and Gavhane GS (2013) Nonlinear analysis of smart functionally graded annular sector plates using cylindrically orthotropic piezoelectric fiber reinforced composite. *International Journal of Mechanics and Materials in Design* 9: 35-53.
- (9) Panda Satyajit and Ray MC (2012) Active damping of nonlinear vibrations of functionally graded laminated composite plates using vertically/obliquely reinforced 1-3 piezoelectric composite”, *ASME journal of Vibration and Acoustics*, 134(2): 021016.
- (8) Panda Satyajit (2011) Nonlinear analysis of smart annular plates using cylindrically orthotropic piezoelectric fiber-reinforced composite. *Journal of Intelligent Material Systems and Structures* 22: 1789-1801.
- (7) Panda Satyajit and Ray MC (2009) Active control of geometrically nonlinear vibrations of functionally graded laminated composite plates using piezoelectric fiber reinforced composites. *Journal of Sound and Vibration* 325: 186-205.
- (6) Panda Satyajit and Ray MC (2009) Control of nonlinear vibrations of functionally graded plates using 1-3 piezoelectric composite. *AIAA Journal* 47: 1421-1434.
- (5) Panda Satyajit and Ray MC (2008) Finite Element Analysis for Geometrically Nonlinear Deformations of Smart Functionally Graded Plates Using Vertically Reinforced 1-3 Piezoelectric Composite. *International journal of Mechanics and Materials in Design* 4: 239-253.
- (4) Panda Satyajit and Ray MC (2008) Nonlinear Finite Element Analysis of Functionally Graded Plates Integrated with Patches of Piezoelectric Fiber Reinforced Composite. *Finite Elements in Analysis and Design* 44: 493-504.
- (3) Panda Satyajit and Ray MC (2008) Active Constrained Layer Damping of Geometrically Nonlinear Vibrations of Functionally Graded Plates Using Piezoelectric Fiber Reinforced Composites. *Smart Materials and Structures*, 17(2):025012.
- (2) Panda Satyajit and Ray MC (2008) Geometrically nonlinear analysis of smart functionally graded plates integrated with a layer of vertically reinforced 1-3 piezoelectric composite. *Acta Mechanica* 198: 235-251.
- (1) Panda Satyajit and Ray MC (2006) Nonlinear analysis of smart functionally graded plates integrated with a layer of piezoelectric fibre-reinforced composite. *Smart Materials and Structures* 15: 1595-1604.

Articles in conference proceedings:

- (20) Reddy RS and Panda Satyajit. Nonlinear frequency response of sandwich beam with frequency-dependent viscoelastic core using reduced-order finite element method. International Conference on Advances in Mechanical Engineering & Material Sciences, School of Mechanical Engineering, VIT-AP University, Amaravati. 22nd -24th January 2022.
- (19) Gupta A and Panda Satyajit. Damping analysis of sandwich beams with the viscoelastic particulate composite core using fractional order derivation viscoelastic constitutive mode. International Conference on Advances in Mechanical Engineering & Material Sciences, School of Mechanical Engineering, VIT-AP University, Amaravati. 22nd -24th January 2022.
- (18) Gupta A, Reddy RS and Panda Satyajit. Design of a viscoelastic layer by incorporating graphite wafers in a zigzag pattern for the augmented hybrid damping treatment of beam. 3rd International Conference on Materials Science and Manufacturing Technology (3rd ICMSMT 2021), Coimbatore, Tamil Nadu, India. 15th April-16th April, 2021.
- (17) Reddy RS, Gupta A and Panda Satyajit. Nonlinear dynamics of cross-flow heat exchanger tube conveying fluid, 2nd International Nonlinear Dynamics Conference (2nd NODYCON 2021), Sapienza University of Rome, Rome, Italy. 16th Feb-19th Feb, 2021.
- (16) Gupta A, Reddy RS and Panda Satyajit. Design of zig-zag 1-3 viscoelastic composite layer for the improved passive damping treatment of beam. 1st International Conference on Energy, Materials Sciences and Mechanical Engineering (EMSME-2020), National Institute of Technology Delhi, India, 30th October - 1st November, 2020.
- (15) Reddy RS, Gupta A and Panda Satyajit. Vibration characteristics of viscoelastic sandwich tube conveying fluid. 2nd International conference on Advances in Mechanical Engineering and Nanotechnology, Manipal University, Jaipur and Research and consultancy section, NIT, Uttarakhand, 28th Feb-29th Feb, 2020. Available at: *Materials Today: Proceedings*, 28:2440-2446.
- (14) Gupta A, Mangoliwala AK, Reddy RS and Panda Satyajit. Elastic instability of the functionally graded porous cylindrical panel. 1st International Conference on Energy, Materials Sciences, and Mechanical Engineering (1st EMSME-2020), National Institute of Technology Delhi. 30th October-1st November 2020.
- (13) Gupta A and Panda Satyajit. Hybrid damping treatment of a layered beam using a particle-filled viscoelastic composite layer. 23rd International Conference on Composite Structures & 6th International Conference on Mechanics of Composites (Joint Event: ICCS23 & MECHCOMP6), University of Porto (FEUP), Porto, Portugal. 1st September-4th September, 2020.
- (12) Reddy RS, Gupta A and Panda Satyajit. Vibration control of loosely supported cross-flow heat exchanger tube undergoing fluid elastic instability. 2nd International Conference on Materials Science and Manufacturing Technology (2nd ICMSMT 2020), Akshaya College of Engineering & Technology, Coimbatore, India. 9th April-10th April, 2020. Available at: IOP Conference Series: Materials Science and Engineering, 872:012068.
- (11) Gupta A, Reddy RS and Panda Satyajit. Design of a 1-3 smart viscoelastic composite layer for augmented constrained layer damping treatment of plates. 2nd International

Conference on Materials Science and Manufacturing Technology (2nd ICMSMT-2020), Akshaya College of Engineering & Technology, Coimbatore, India. 9th April-10th April, 2020. Available at: IOP Conference Series: Materials Science and Engineering, 872:012067.

- (10) Gupta A, Panda Satyajit, Reddy RS and Kumar N. Damping treatment of beam with unconstrained/constrained 1-3 smart viscoelastic composite layer. 10th International Conference on Materials Manufacturing and Characterization (10th ICMPC 2020), GLA University, Mathura, India. 21th February-23 February, 2020. Available at: Materials Today: Proceedings, 26: 956-962.
- (9) Reddy RS, Gupta A and Panda Satyajit. The effective properties of electro-viscoelastic composite using energy method. 9th International Conference on Materials Manufacturing and Characterization (9th ICMPC 2019), Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India. 8th March-10th March 2019. Available at: Materials Today: Proceedings 18: 4164-4175.
- (8) Reddy RS, Gupta A and Panda Satyajit. The energy-based method for effective dynamic properties of viscoelastic composite. 9th International Conference on Materials Manufacturing and Characterization (9th ICMPC 2019), Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India. 8th March-10th March 2019. Available at: Materials Today: Proceedings, 18:4190-4200.
- (7) Gupta A, Panda Satyajit and Reddy RS. Design of graded laminated composite beam under moving load. 10th International Conference on Materials Manufacturing and Characterization (10th ICMPC 2020), GLA University, Mathura, India. 21th February-23 February, 2020. Available at: Materials Today: Proceedings, 26:1572-1579.
- (6) Panda Satyajit. Design and Effective Properties of a Functionally Graded Unidirectional Fiber-Reinforced Composite. ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Colorado Springs, Colorado, USA, September 21–23, 2015. Available at: doi.org/10.1115/SMASIS2015-9027.
- (5) Panda Satyajit. Nonlinear flexure and elastic stability of radially graded annular plates with heated plate-edge. Proceedings of Mechanics of Functional Materials and Structures (ACMFMS 2012, IIT Delhi).
- (4) Panda Satyajit, Nandi A and Neogy S. Stabilization of Non-axisymmetric and Anisotropic Rotor System via Liapunov-Floquet Transformation. Proceedings of Third International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2004, IIT Kharagpur).
- (3) Reddy RS, Gupta A and Panda Satyajit. Supersonic aerodynamic instability characteristics of bidirectional porous functionally graded panel. ASME Turbo Expo 2021, Turbomachinery Technical Conference & Exposition 2021, ASME International Gas Turbine Institute. 7th June-11th June, 2021.
- (2) Gupta A, Reddy RS and Panda Satyajit. Fractional derivative model of 0-3 viscoelastic composite for geometrically nonlinear vibration control of sandwich plate. International Conference on Progressive Research in Industrial and Mechanical Engineering (PRIME – 2021), Department of Mechanical Engineering, National Institute of Technology Patna, India. 5th August -7th August, 2021.
- (1) Reddy RS, Gupta A and Panda Satyajit. Parametric instability control of porous functionally graded beam using piezoelectric actuators. International Conference on Progressive Research in Industrial and Mechanical Engineering (PRIME–2021), Department of Mechanical Engineering, National Institute of Technology Patna, India.

5th August -7th August, 2021.

Book chapters:

- (3) Panda Satyajit, Gupta A and Reddy RS. Viscoelastic Composites for Passive Damping of Structural Vibration. In: Advanced Computational Methods in Mechanical and Materials Engineering, edited by A. Kumar, Y. Gori, N. Dutt, Y. K. Singla and A. Maurya, CRC Press, eBook ISBN 9781003202233 (2021).
- (2) Gupta A, Reddy RS and Panda Satyajit. Design of zig-zag 1-3 viscoelastic composite layer for the improved passive damping treatment of beam. In: Advances in Mechanical and Materials Technology, edited by K. Govindan, H. Kumar and S. Yadav, Lecture Notes in Mechanical Engineering, Springer Singapore, Hardcover ISBN 978-981-16-2793-4, eBook ISBN 978-981-16-2794-1 (2021).
- (1) Gupta A, Mangoliwala AK, Reddy RS and Panda Satyajit. Elastic instability of the functionally graded porous cylindrical panel. In: Advances in Mechanical and Materials Technology, edited by K. Govindan, H. Kumar and S. Yadav, Lecture Notes in Mechanical Engineering, Springer Singapore, Hardcover ISBN 978-981-16-2793-4, eBook ISBN 978-981-16-2794-1 (2021).

Short term course/conference organized:

- (1) TEQIP III short term course on Active/Passive Damping Composites for Structural Vibration Control, January 6th-10th, 2020. Coordinator: Dr. S Panda.
- (2) TEQIP III short term course on Structural Vibration Problems: Theoretical and Experimental Analysis Methodologies, December 21st-23rd, 2020. Coordinator: Dr. S. Panda.
- (3) 12th International Conference on Vibration Problems, ICOVP 2015, December 14-17, 2015, IIT Guwahati. Secretary: Dr. S. K. Dwivedy, Treasurer: Dr. S. Panda.

Ph. D. students:

- (1) Dr. M. S. Aravinda Kumar; Thesis title: Design and nonlinear frequency response analysis of smart functionally graded plates using a 1-3 piezoelectric composite, 2015.
- (2) Dr. A. Srinivas Pavan Kumar; Thesis title: Active control of annular plates through the design of extension/shear mode PFC actuators, 2017.
- (3) Dr. Ambesh Kumar; Thesis title: Design of a 1-3/0-3 viscoelastic composite layer for augmented active/passive constrained layer damping of structural vibration, 2018.
- (4) Dr. Manish K. Dubey; Thesis title: Design and applications of shear/extension mode PFC actuators in vibration control of annular plates, 2020.
- (5) Dr. Abhay Gupta; Thesis title: A graphite particle-filled viscoelastic composite layer for active/passive constrained layer damping treatment of structural vibration, 2021.
- (6) Mr. R. S. Reddy (In progress)
- (7) Mr. Nitin Kumar (In progress)
- (8) Mr. Rahul Kumar (In progress)
- (9) Mr. Vishwanil Vishwanath Sarnaik (In progress); Co-supervisor: Dr. S. Kanagaraj.
- (10) Mr. Mekala Anil Kumar (In progress)
- (11) Mr. Rakesh Panda (In progress); Co-supervisor: Dr. A. Nandy.

M. Tech. students:

- (1) Mr. Abhay Bodake, "Geometrically nonlinear analysis of FG plates and panels", 2010.

- (2) Mr. Bijoy V. More, "Nonlinear analysis of non-axisymmetric smart annular plates", 2010.
- (3) Mr. Gavhane G. Sopan, "Nonlinear analysis of smart FG annular sector plates using cylindrically orthotropic piezoelectric composite actuator", 2011.
- (4) Mr. Sagar S. Bharamal, "Nonlinear finite element analysis of smart FG hollow shafts under torsion", 2011.
- (5) Mr. Saikat Bhowmik, "Nonlinear analytical solutions for flexure of FG shell panels integrated with a piezoelectric composite layer", 2012.
- (6) Mr. Sawangikar S. Sandeep, "On the performance of cylindrically orthotropic 1-3 piezoelectric composite distributed actuator in vibration control of annular plates", 2012.
- (7) Mr. Kadam P. Ashoke, "Geometrically nonlinear analysis of radially graded annular plates with a heated edge", 2012.
- (8) Mr. Sandeep Kumar, "Effective elastic properties of graded unidirectional continuous fibre-reinforced composite", 2013.
- (9) Mr. Padawale N. Damodhar, "Nonlinear free and forced vibration of radially graded annular plates with heated edges", 2013.
- (10) Mr. Pankaj Rawat, "Nonlinear frequency response analysis of a smart FG cylindrical shell with a heated surface", 2014.
- (11) Mr. J. T. S. Sarma, "Design of a viscoelastic composite for enhanced unconstrained layer damping of structural vibration", 2014.
- (12) Mr. Panathula C. Sekhar, "Reduction of stress concentration through the design of a graded particulate composite", 2015.
- (13) Mr. Vibhooti N. Mishra, "Effective visco-electro-elastic properties of polymer based piezoelectric fiber-reinforced composite", 2015.
- (14) Mr. Adarsh Shrivastava, "Analysis of FRC laminates under transient thermal load", 2016.
- (15) Mr. Rajidi S. Reddy, "Design of microstructure of piezo-visco composite for active-passive damping of structural vibration", 2016.
- (16) Mr. Parthasarathi Mohapatra, "Numerical homogenization of d33 MFC with interdigitated electrode-fingers", 2017.
- (17) Mr. Bhanu Pratap Patel, "Analytical solutions for flexural vibration of annular plates integrated with a layer of piezoelectric actuator", 2017.
- (18) Mr. Souvik Karmakar, "Design of a viscoelastic composite layer for improved free/constrained layer damping treatment of structural vibration", 2018.
- (19) Mr. Shaikh A. S. Malek, "Shear actuation of a beam element using piezoelectric composite actuator", 2018.
- (20) Mr. Saurabh Kumar, "A shell theory based finite element formulation for modelling three-dimensional deformation of thin pipes/tubes using one-dimensional beam element", 2019.
- (21) Mr. Kapil Kumar, "A finite element formulation for analysis of fluid conveying sandwich pipes", 2019.
- (22) Mr. Amit Kumar Mangoliwala, "Elastic instability of functionally graded porous cylindrical panels", 2020.
- (23) Mr. Prasant Mishra, "Stress analysis around a hole in a sandwich plate", 2020.
- (24) Mr. Sachin V, "A mathematical modeling approach for handling compressive load on

generally curved beam”, 2020.

- (25) Mr. Abhinav Singh, “A study on an arc-shaped vibration isolator”, 2021.
- (26) Mr. Munendra, “Damping analysis of sandwich beams with the viscoelastic particulate composite core using fractional order derivative constitutive model”, 2021.
- (27) Ms. Sama Lavanya, 2022 (In progress)
- (28) Mr. Kishore Chakka, 2022 (In progress)
- (29) Mr. Sunil Mandloi, 2022 (In progress)