

DR. SHUBHASHIS SANYAL

Professor (HAG) and Dean (CR & RM)

Mechanical Engineering Department,
NIT Raipur, Raipur (C.G.) 492010



Area of Interest: Synthesis of Mechanisms, Machine Design, Stress Analysis, Robotics.

Awards:

1. **GSFC and ISTE National Award for Best M.Tech. Thesis “ Safe Spacing of Nozzles in Pressure Vessel ”** submitted under the guidance of Prof. K. B. Mulchandani, M.I.E.D. University of Roorkee, Second Prize Holder, 1990.
2. **Outstanding Engineering Teacher Award**, felicitated by the Institution of Engineers (India) Chhattisgarh State Centre, 5th Sept. 2014.
3. **Certificate of Appreciation** as TEQIP Coordinator by NPIU, MHRD, GOI.

Portfolio's handled:

- Hostel Warden, Chief Warden, Registrar I/C.
- Prof. I/C Workshop, Head of the Dept. App. Mechanics, Head of the Dept. Mechanical.
- Dean (R&C), Dean (FW), Dean (CR&RM).
- Industry Linkage Officer (CIILP), Chairman Continuing Education Cell, IICC Chairmen, TEQIP- II Coordinator, TEQIP - III Coordinator.
- Prof. I/C – Click Club, Prof. I/C – Raaga Club,

Membership of Professional Institutions:

1. Life Member, **Indian Society for Technical Education.**
2. Life Member, **Association for Machines & Mechanisms.**
3. Fellow Member, **Institution of Engineers.**
4. Life Member, **Tribology Society of India.**

Doctoral Thesis Supervised:

1. **Investigation on the Performances of Rolling Element Bearings for Enhanced Life** by Shri S. P. S. Matharu, supervised by Dr. S. Sanyal, co-supervised by Dr. D. S. Bal.
2. **Kinematic Synthesis and Analysis of Mechanisms** by Shri G. S. Bedi, supervised by Dr. S Sanyal.
3. **Analytical and Experimental Investigation of Mitigation of Stress Concentration Factor in Isotropic and Orthotropic Plates with Different Discontinuities Subjected to Various Loading Conditions** by Shubhrata Nagpal, supervised by Dr. S. Sanyal, co-supervised by Dr. N. K. Jain.
4. **Three-Dimensional Analysis of Stress Concentration Factor in Isotropic, Orthotropic and Laminated Composite Plate with Central Circular Hole under Various Loading** by Moon Banerjee, supervised by Dr. N. K. Jain, co-Supervised by Dr. S. Sanyal.

5. **A Novel Method for Identification of Structural Characteristics of Planar Kinematic Chains** by Shri Arvind Kumar Shukla, supervised by Dr. S. Sanyal.
6. **Kineto-Elastodynamic Analysis of Polymeric Composite Planar Mechanism Under Hygrothermal Environment** by Shri Shailendra Kumar Singh, supervised by Dr. S. Sanyal.
7. **Investigation of Thermal Performance of Low Income Group Houses in Chhattisgarh** by Nisha Netam, supervised by Dr. S. Sanyal, co-supervised by Dr. S. Bhowmick.
8. **Fracture and Fatigue Analysis of Cracked Piezoelectric Plates using XFEM** by Shri Gulab Pamnani, supervised by Dr. S. Bhattacharya, co-supervised by Dr. S. Sanyal.
9. **A Parametric Investigation of Stresses and deformation in Functionally Graded Axisymmetric Structures** by Shri Lakshman Sondhi, supervised by Dr. S. Bhowmick, co-supervised by Dr. S. Sanyal.
10. **An Investigation of Stress and Deformation Behaviour of Functionally Graded Beams –** by Shri Deepak Mahapatra, supervised by Dr. S. Sanyal, co-supervised by Dr. S. Bhowmick.
11. **Development and Characterization of High Entropy Alloys** by Shri Vinay Kumar Soni Supervised by Dr. S. Sanyal, co-supervised by Dr. Sudip K Sinha.
12. **A Parametric Study of Static and Dynamic Behaviour of Rotating Functionally Graded Beams** by Shashi Chichkhede, supervised by Dr. S. Sanyal, co-supervised by Dr. S. Bhowmick.

Research Articles:

1. **Pseudo Probabilistic Approach To Test Isomorphism Among Kinematic Chain**, by S.Sanyal, A.C.Rao, M.Choubey, Transactions of C.S.M.E., Vol. 21, No. 2, 1997.
2. **Pseudo Probabilistic Approach To Detect Distinct Inversions Of Kinematic Chain**, by S.Sanyal, A.C.Rao, & M. Choubey, Transactions of C.S.M.E., Vol. 21, No. 2, 1997.
3. **Stress Mitigation in Infinite Thin Plate with Two Circular Holes Under Tensile Loading** by S.Sanyal, M.Swarnakar, S.Dehariya and M.Dewangan, CSVTU Research Journal, pp 67-69, Vol.2, No.1, Jan 2009.
4. **Joint Connectivity: A New Approach for Detection of Isomorphism and Inversions of Planar Kinematic Chains** by G.S.Bedi and Sanyal S, Journal of Institution of Engineers (India), 2010, Vol. 90, pp. 23 – 26.
5. **Development of a Multipurpose, Efficient and Inexpensive Bearing Test Rig** by S. P. S. Matharu, S. Sanyal and D. S. Bal, Journal of Engineering and Technology Research Vol. 2(3), pp. 044-049, March 2010.
6. **Representative Lubricant Film Thickness, a New Concept for Online Condition Monitoring of Rolling Element Bearings**, SPS Matharu, S Sanyal, DS Bal, International Journal of Applied Engineering Research 6 (16), 1981-1987, 4, 2011.
7. **Modified Joint Connectivity approach for Identification of Topological Characteristics of**

Planar Kinematic Chains, G S Bedi and S Sanyal, Proceedings of the Institution of Mechanical Engineers Part C: Journal of Mechanical Engineering Science, Vol. 225, No.11, 2700-2717, Nov. 2011.

8. **Interaction Effect of Auxiliary Holes for Mitigation of Stress Concentration in Isotropic Plate with Central Circular Hole Subjected to In-Plane Loading**, Shubhrata Nagpal, S. Sanyal and N. K. Jain, International Journal of Mechanics and Solids, Volume 6, Number 2, pp. 149-156, 2011.
9. **Structural Identification of Distinct Inversions of Planar Kinematic Chain**, Sanyal Shubhashis, IIUM Engineering Journal, Special Issue, Malaysia, Mechanical Engineering, pp 87 – 94, 2011.
10. **Design Optimization of Rectangular Isotropic/Orthotropic Plate with Opposite Semicircular Notches subjected to In-Plane Static Loading for Reduction of Stress Concentration Factor**, Ms. Shubhrata Nagpal, Dr. S. Sanyal and Dr. Nitin Jain, International Journal of Applied Engineering Research, Volume 6, Number 18, pp.2239-2242, 2011.
11. **3D Analysis of Stress Concentration Factor and Deflection in Thin Isotropic and Orthotropic Plates with Central Circular Hole Subjected to Transverse Loading**, Jain N K, Sanyal S, International Journal of Mechanical Engineering Research and Development, Vol.1, Number 2, 2011.
12. **Joint - Loop Representative Table for Detection of Isomorphism among Kinematic Chains**, G.S. Bedi and S.Sanyal, CSVTU Research Journal, Vol. 05, 2012, pp 82 -87.
13. **Development of a Reliable, Inexpensive and Multipurpose Test Rig for Determination of Electrical Resistivity of Liquid Lubricants**, SPS Matharu, S Sanyal, DS Bal, International Journal of Pure and Applied Sciences and Technology 8 (2), 34, 2, 2012.
14. **Three Dimensional Parametric Analyses on Effect of Fibre Orientation for Stress Concentration Factor in Fibrous Composite Cantilever Plate with Central Circular Hole Under Transverse Loading-** Moon Banerjee, Dr. N. K. Jain and Dr. S. Sanyal, IIUM Engineering Journal, Malaysia, Vol.13, No-2, pp 131 – 144, 2012.
15. **Mitigation Curves for Determination of Relief Holes to Mitigate Stress Concentration Factor in Thin Plates Loaded Axially for Different Discontinuities**, Shubhrata Nagpal, S. Sanyal, Nitin Jain, International Journal of Engineering and Innovative Technology Volume 2, Issue 3, pp 1-7, September 2012.
16. **Stress Concentration and its Mitigation Techniques in Flat Plate with Singularities - A Critical Review**, S Nagpal, N Jain, S Sanyal, Engineering Journal 16 (1), 1-16, 47, 2012.
17. **Stress Concentration in Isotropic and Orthotropic Composite Plates with Center Circular Hole Subjected to Transverse Static Loading**, M Banerjee, NK Jain, S Sanyal, Int J Mech Ind Eng 3 (1), 109-113, 21, 2013.

18. **Effect of Elastic Constants on Stress Concentration Factor and its Mitigation in Rectangular Plate with Central Circular Hole Under in Plane Loading**, S Nagpal, S Sanyal, NK Jain, International Journal of Engineering Research 3 (6), 2014.
19. **Structure Based Grading of Kinematic Chains**, S. Sanyal, G. S. Bedi, Applied Mechanics and Materials 575, 501-506, 2, 2014.
20. **Numerical Simulation of Crack Propagation under Fatigue Loading in Piezoelectric Material using Extended Finite Element Method**, S. Bhattacharya, G. Pamnani, S. Sanyal, K. Sharma, International Journal of Computational Materials Science and Engineering Vol. 4, No. 4, 2015.
21. **Three Dimensional Parametric Analyses of Stress Concentration Factor and Its Mitigation in Isotropic and Orthotropic Plate with Central Circular Hole Under Axial In-Plane Loading**, S Nagpal, NK Jain, S Sanyal, Journal of The Institution of Engineers (India): Series C 97 (1), 85-92, 3,2016.
22. **Analysis of Semi-Permeable Crack Growth in Piezoelectric Materials Using Extended Finite Element Method**, G Pamnani, S Bhattacharya, S Sanyal, International Journal of Applied Mechanics, 9 (07), 1750106, 7, 2017.
23. **An Investigation of Stresses and Deformation States of Clamped Rotating Functionally Graded Disk**, AK Thawait, L Sondhi, S Sanyal, S Bhowmick, Journal of Theoretical and Applied Mechanics, 55 (1), 189-198, 7, 2017.
24. **An Investigation of Stress and Deformation States of Rotating Thick Truncated Conical Shells of Functionally Graded Material**, A Thawait, L Sondhi, S Bhowmick, S Sanyal, Journal of Solid Mechanics 9 (4), 865-877, 2017.
25. **Elastic Analysis of Functionally Graded Variable Thickness Rotating Disk by Element Based Material Grading**, AK Thawait, L Sondhi, S Sanyal, S Bhowmick, Journal of Solid Mechanics 9 (3), 650-662, 9, 2017.
26. **Thermal Performance Analysis to Assess Inhabitant Comfort Inside LIG Houses in Chhattisgarh**, N Netam, S Sanyal, S Bhowmick, International Journal of Theoretical Applied Mechanics 12 (3), 613-622, 3, 2017.
27. **Parametric Study of Interaction Effect Between Closely - Spaced Nozzles in A Thin Cylindrical Pressure Vessel**, D. S. Kushan, Shubhashis Sanyal, Shubhankar Bhowmick, International journal of Pressure Vessel and Piping, Elsevier Publication, <https://doi.org/10.1016/j.ijpvp.2018.05.009>, 31 May 2018.
28. **An Anisotropic Analysis of Human Femur Bone with Walking Posture: Experimental and Numerical Analysis**, Ritu Painkra, Shubhashis Sanyal, Arindam Bit, Bio Nano Science, Springer, 8(4), 1054 – 1064, 3, 17th Sept.2018.

29. **Modified Experimental Procedure to Determine the Output Variable in An Optimum Range – A Case Study: Pulley Belt Experiment** by Ankur Verma, Shubhashis Sanyal, International Journal of Mechanical Engineering Education, SAGE Journals, Oct. 4, 2018.
30. **Stress and Deformation Analysis of Clamped Functionally Graded Rotating Disks with Variable Thickness**, A K Thawait, L Sondhi, S Sanyal, S Bhowmick, Mechanics and Mechanical Engineering 23 (1), 202-211, 3, 2019.
31. **An Approximate Solution of Functionally Graded Timoshenko Beam Using B-Spline Collocation Method**, D Mahapatra, S Sanyal, S Bhowmick, Journal of Solid Mechanics 11 (2), 297-310, 46, 2019.
32. **Selection of High Entropy Alloy for Solid Solution Using Multi-Criteria Decision Making Tool**, V K Soni, S Sanyal, S K Sinha, Materials Science Forum 969, 466-471, 1, 2019.
33. **Effect of Attack Angle on Lift and Drag of a Bio-Inspired Corrugated Aerofoil**, A Biradar, A Chandraker, R Madan, S Sanyal, S Bhowmick, Innovative Product Design and Intelligent Manufacturing Systems, 261-268, 2, 2020.
34. **Gradient Method for Identification of Isomorphism of Planar Kinematic Chains**, A Shukla, S Sanyal, Australian Journal of Mechanical Engineering 18 (1), 45-62, 7, 2020.
35. **Numerical Simulation of Tri-Layer Interface Cracks in Piezoelectric Materials Using Extended Finite Element Method**, G Pamnani, S Bhattacharya, S Sanyal, Iranian Journal of Science and Technology, Transactions of Mechanical Engineering, 2020.
36. **A Mathematical Model Featuring Time Lag and Decrement Factor to Assess Indoor Thermal Conditions in Low-Income-Group House**, N Netam, S Sanyal, S Bhowmick, Journal of Thermal Engineering 6 (2), 114-127, 1, 2020.
37. **An Investigation of Stress and Deformation Behavior of Functionally Graded Timoshenko Beams Subjected to Thermo-Mechanical Load**, D Mahapatra, S Sanyal, S Bhowmick, Mechanics of Advanced Composite Structures 7 (1), 157-176, 2020.
38. **Effect of Temperature on Stress Concentration Factor**, J Satish, S Sanyal, S Bhowmick, Recent Trends in Mechanical Engineering, 641-648, 2020.
39. **Phase Evolution and Mechanical Properties of Novel FeCoNiCuMox High Entropy Alloys**, V K Soni, S Sanyal, S K Sinha, Vacuum 174, 109173, 15, 2020.
40. **Property Oriented Design of Non Equiatomic High Entropy Alloy Composition**, VK Soni, S Sanyal, S K Sinha, Advances in Materials and Processing Technologies, 1-18, 1, 2020.
41. **Microstructure and Mechanical Properties of Non Equiatomic FeCoNiCuMo High Entropy Systems**, V K Soni, S Sanyal, S K Sinha, Advances in Materials and Processing Technologies, 1- 14, 1, 2020.
42. **Influence of Tungsten on Microstructure Evolution and Mechanical Properties of Selected Novel FeCoCrMnWx High Entropy Alloys**, V K Soni, S Sanyal, SK Sinha, Intermetallics 132,

107161, 2, 2021.

43. **A Review on Phase Prediction in High Entropy Alloys**, V K Soni, S Sanyal, KR Rao, SK Sinha, Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 13 May 2021.
44. **Generation of Coupler Curves for Planar Kinematic Chains Using Link Joint Equations**, H S Yadav, S Sanyal, Machines, Mechanism and Robotics, 491-501, 2022.
45. **Effect of Structural Characteristics on Kinematics of Planar Kinematic Chains**, A Biradar, S Sanyal, Machines, Mechanism and Robotics, 257-267, 2022.
46. **Three Dimensional Photoelastic Investigation for Analyzing Stress Concentration Factor in Isotropic Square Simply Supported Plate with Hole Subjected to Transverse Loading**, Moon Banerjee, Nitin Kumar Jain, Shubhashis Sanyal, Current Applied Science and Technology Vol. 22 No. 5, September-October 2022.
47. **Design of Pneumatically Actuated Soft Robotic Gripper for Gripping Cylindrical Objects of Varying Diameters**, Monalisa Sharma and Shubhashis Sanyal, pp 547–558, Recent Advances in Machines and Mechanisms(LNME), 4 October 2022.
48. **Bilinear and Bicubic Interpolations for Image Presentation of Mechanical Stress and Temperature Distribution**, M.B. Pithani, S. Sanyal, A.K. Shukla, Power Engineering and Engineering Thermophysics 1 (1), 8-18, 2022.
49. **Modified Secant Method for Reduction in Number of Iterations**, Sunil Pal, Anuj Kumar Shukla, Shubhashis Sanyal, Mathematical Modelling of Engineering Problems, Vol. 10, No. 1, pp. 376-382, February, 2023.
50. **Static Behaviour of Functionally Graded Rotating Cantilever Beams Using B-Spline Collocation Technique**, Shashi Chichkhede, Deepak Mahapatra, Shubhashis Sanyal, Shubhankar Bhowmick, FME Transactions Vol. 51, No. 03, pp. 347-35501, January 2023.
51. **Effect of Porosity on the Static Response of Rotating and Non-Rotating Porous Timoshenko Beam**, Shashi Chichkhede, Deepak Mahapatra, Shubhashis Sanyal, Shubhankar Bhowmick, Journal of Computational Applied Mechanics Vol. 55, No. 02, pp. 209-222, 01 April 2024.
52. **Exploring Thermal Comfort in Rural Houses of Chhattisgarh State, India: A Comprehensive Survey and Adaptive Model Analysis**, Chaman Lal Pal, Nisha Netam, Shubhashis Sanyal, M Manish, Science and Technology for the Built Environment Vol. 30, No. 05, pp. 523-545, 27 May 2024.
53. **Analyzing the Impact of Diametral Compressive Loads on Stress Distribution in Circular Discs Through Advanced Photoelastic Techniques**, Ramit Chugh, Shubhrata Nagpal, Shubhashis Sanyal, RG Brajesh, Journal of Failure Analysis and Prevention Vo. 24, No. 03, pp. 1096-1105, June, 2024.
54. **Parameters for Mitigation of Stress Concentration Factor in a Thin Curved Plate with Single**

Circular Hole Under Tensile Load, Ramit Chugh, Shubhrata Nagpal, Shubhashis Sanyal, Journal of Failure Analysis and Prevention Vol. 25, pp. 741-756, 10 March 2025.

55. **Dynamic behaviour of rotating functionally graded Timoshenko beam via B-spline collocation method**, Shashi Chichkhede, Deepak Mahapatra, Shubhashis Sanyal, Shubhankar Bhowmick, Applied and Computational Mechanics Vol. 19, No. 01, pp. 49-68, 30 June 2025.

56. **Finite Element and Photoelastic Study of Stress Fields in Curved Plates with Identical Holes**, Ramit Chugh, Shubhrata Nagpal, Shubhashis Sanyal, Mechanics Based Design of Structures and Machines, *Taylor & Francis*, pp. 1-24, 20 August 2025.

Conferences:

1. **Computer Aided Design and Drafting of Flange Coupling Through Parametric processing**, by V.Verma, S.Sanyal, NACOMM 1993, I.I.T. Kharagpur.
2. **Photo elastic Analysis for Safe Spacing of Nozzles In A Pressure Vessel**, by S.Sanyal, K.B.Mulchandani, NACOMM 1993, I.I.T. Kharagpur.
3. **Computer Aided Synthesis of Slider Crank Mechanism with Four Accuracy Points**, by S.Khandekar, P.Sharma, S.Sanyal, NACOMM 1993, I.I.T. Kharagpur.
4. **Analysis of Walking Mechanism and Design of the Shoe Insole Through Mathematical Modelling**, by A. Chaturvedi, S.Sanyal, NACOMM 1995, C.M.E.R.I., Durgapur.
5. **Detection of Isomorphism Among Kinematic Chains Using Joint-Loop Probability Matrices**, by A.Ganguly, S.Sanyal, NACOMM 1997, I.I.T. Kanpur.
6. **Relief Holes for Stress Mitigation in Infinite Thin Plates with Single Circular Hole Loaded Axially** by Sanyal S and Ms. Priti Yadav, ASME International Mechanical Engineering Congress and Exposition, 5 – 11 November 2005, Orlando, Florida, USA.
7. **Multiple Relief Holes for Stress Mitigation in Infinite Thin Plates with Single Circular Hole under axial loading** by Sanyal S and Ms. Priti Yadav, 5 - 8 July 2006, 2nd IC-SCCE, From Scientific Computing to Computational Engineering” Athens, 5-8 July, 2006.
8. **Detection of Isomorphism amongst Planar Kinematic Chains using Link Joint Connectivity Table**, Sanyal Shubhashis, 25 - 27 Dec.2009, International Conference on Applied Mechanics and Machines, WASET09, Bangkok.
9. **Structural Identification of Distinct Inversions of Planar Kinematic Chains**, Sanyal Shubhashis, 17 - 19 May 2011, International Conference on Mechanical, Automotive and Aerospace Engineering, ICMAAE’11, Kuala Lumpur, Malaysia.
10. **Effect of Fiber Orientation on Stress Concentration Factor in Fixed Rectangular Fibrous Composite Plate with Center Circular Hole Subjected To Transverse Loading**, Dr. N. K. Jain, Moon Banerjee, Dr. S. Sanyal, Third Asian Conference on Mechanics of Functional Materials and Structures, ACMFMS 2012, 5-8 December at IIT Delhi.
11. **Analysis of Stress Concentration for Rectangular Plate with Hole under Transverse Loading**

by **Three Dimensional Finite Element Analyses**, Moon Banerjee, Dr. N. K. Jain and Dr. S. Sanyal, The Indian Society of Theoretical and Applied Mechanics ISTAM, Organized by IIT KGP at DIAT, Pune, 17-20 December 2012.

12. **Three Dimensional Analysis for Effect of Fibre Orientation on Stress Concentration Factor in Fibrous Composite Plates with Central Circular Hole Subjected to In-Plane Static Loading**, N K Jain, M Banerjee, S Sanyal, 2013 7th International Conference on Intelligent Systems and Control (ISCO), 2, 2013.
13. **Loop Based Algorithm for Automatic Sketching of Planar Kinematic Chains**, GS Bedi, S Sanyal, iNaCoMM, 452-456, 8, 2013.
14. **Thermal Comfort Analysis: A Case Study of LIG Housing in Chhattisgarh**, Nisha Netam, S. Sanyal, S. Bhowmick, ICME 2015, 18 - 20 Dec. 2015, Dhaka, Bangladesh.
15. **An Approximate Solution to the Stress and Deformation States of Functionally Graded Rotating Disks**, Lakshman Sondhi, S. Sanyal, S. Bhowmick, ICME 2015, 18 - 20 Dec. 2015, Dhaka, Bangladesh.
16. **A PMV-PPD model based study of thermal comfort in Low-Income Group house in Chhattisgarh**, N Netam, S Sanyal, S Bhowmick, MATEC Web of Conferences 172, 06006, 3, 2018.
17. **Investigation of phase stability of novel equiatomic FeCoNiCuZn based-high entropy alloy prepared by mechanical alloying**, V K Soni, S Sanyal, S K Sinha, AIP Conference Proceedings 1953 (1), 030253, 1, 2018.
18. **Limit Elastic Yield Pressure of Internally and Externally Pressurized Functionally Graded Thick Cylinder**, L Sondhi, R Kumar, S Sanyal, S Bhowmick, Materials Today: Proceedings 18, 5507-5514, 2019.
19. **Limit elastic speed analysis for functionally graded rotating beam**, Shashi Chichkhede, Deepak Mahapatra, Shubhashis Sanyal, Shubhankar Bhowmick, Materials Today: Proceedings, 19 August 2023.
20. **Influence of Material Distribution on the Position of Neutral Axis of Functionally Graded Cantilever Beam**, Shashi Chichkhede, Deepak Mahapatra, Shubhashis Sanyal, Shubhankar Bhowmick, Key Engineering Materials, Vol. 959, pp. 197-205, October 2023.
21. **Pneumatically Operated Tendril-based Soft Hyper-Redundant Robotic Gripper**, Shubhashis Sanyal, Anuj Kumar Shukla, Hrishi Sharad Pinjan, Piyush Tailor, Pyla Pavan Kumar, Suman Saurav, Surjeet Kumar Bhargav, Journal of Physics: Conference Series, Vol. 2784. No. 01, 2024.

Book Chapter:

1. **A Systematic Survey of the Realm of Biomechanics: A Mechanical Engineer's Perspective**, D Mahapatra, S Bhowmick, S Sanyal, Design, Development, and Optimization of Bio- Mechatronic Engineering Products, IGI Global, Publisher of Timely Knowledge, pp 1-35, 2019.

2. **Recent Advances in Machines, Mechanisms, Materials and Design:** Select Proceedings of iNaCoMM 2023, Edited by Rajana Suresh Kumar, Shubhashis Sanyal, P M Pathak, Springer 2024.

Case Study Presentation:

1. **SUSTAINABLE MODEL OF REVENUE GENERATION** at Show-Case Conference, CIILP, held at GOA on 2004.

Others:

Curriculum Development and Training Provided:

1. Certified **Applied DACUM Facilitator** and **Applied Strategic Planning Trainer**, Canada India Industry Institute Linkage Project.
2. Two Competencies based Course Curriculum's using **DACUM** techniques **Chemical Process Operator** and **Commissioning and Maintenance of Transformer**.
3. Provided training for development of **Institute's Strategic Plan** to state technical institutions.

Industry Institute Interaction:

1. Developed **Testing and Consultancy brochure** for promoting Institute's testing and consultancy.
2. **Interaction with Various State Govt. Dept's and Industries** for identification of the institute as consultancy provider.

Project: Computer Aided Design and Drafting Lab Development, funded under FIST-DST scheme.

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