7.2.1 Research ECO System in the Department of Instrumentation Engineering

Research Area: Process Control, Artificial Intelligence & Control System **Faculty Member: Dr. L. M. Waghmare , Dr. R. H. Chile**					
Research Scholar –					
Student Names	**UG/PG**	**Year**	**Project Type**	**Project Title**	**Outcome (Publication)**
S. P. Jadhav	Ph.D	2017-18	Thesis	Some Studies on Fractional Order Controller for Industrial Application	**Publications:** 1. S. P. Jadhav, R. H. Chile, S. T. Hamde,"A simple method to design robust fractional-order lead compensator", International Journal of Control, Automation and Systems(Springer), Volume 15, Issue 3, pp 1236–1248, June 2017. 2. S. P. Jadhav, R. H. Chile and S. T. Hamde, "Modeling and Design of Fractional-Order IMC Based Controller for Power Plant Gas Turbine", ASME 2015 Gas Turbine India Conference, 02 Dec, 2015. 3. S. T. Hamde , R. H. Chile, S. P. Jadhav, "Robust Fractional-order Controller using Bode's Ideal Transfer Function for Power Plant Gas Turbine" International Journal of Computer Applications . Feb2014, Vol. 88, p1-7. 7. 4. Sharad P Jadhav, Ramrao Adik, Rajan H Chile, Shri Guru Gobind Singhji, Satish T Hamde, "Reduced-parameter fractional-order modeling of large dynamical system: Application to Gas Turbine", 2016 International Conference on Automatic Control and Dynamic Optimization Techniques (ICACDOT), IEEE, PP. 47-51.
B. J. Parvat	Ph.D	2017-18	Thesis	Design of second order sliding mode controller for process control	**Publications:** 1. B. J. Parvat, B. M. Patre, "Fast terminal sliding mode controller for square multivariable processes with

				application	experimental application", Volume 5, Issue 4, pp 1139–1146, Volume 5, Issue 4, pp 1139–1146, December 2017. 2. B.J. Parvat, B. M. Patre, "Robust Dynamic Sliding Mode Control for a Class of Uncertain Multi-variable Process", Proceedings of the International Conference on Data Engineering and Communication Technology (Springer Singapore), P. No. 67-76. 24 Aug, 2016.
Magar Durga	PG	2017-18	Dissertation	Fractional Order controller for Process Control Applications	
Asmita Kulkarni	PG	2016-17	Dissertation	Design & Tuning method of PID controller with delay for inverse response processes	
Ranvir Desai	PG	2016-17	Dissertation	Review of Active Disturbance Rejection Control for Application in Process Control	**Publications:** Ranvir Desai, B. M. Patre, Senior Member, IEEE and Sushant N. Pawar," Active Disturbance Rejection Control with Adaptive Rate Limitation for Process Control Application", 2018 Indian Control Conference (ICC) January 4-6, 2018. IIT Kanpur, India
B. B. Musmade	Ph.D	2013-14	Thesis	Design of sliding model controllers for process control applications	**Publications:** 1. B.B. Musmade, A.A. Khandekar, B.M. Patre, "Sliding mode control design for robust tracking of open loop stable processes with experimental application" International Journal of Dynamics and Control (Springer) Pages 1-10, 2016. 2. B.B. Musmade, B.M. Patre, "Sliding mode control design for robust regulation of time-delay processes", Transactions of the Institute of Measurement and Control (SAGE Publications), 11 June, 2014. 3. B.B. Musmade, B.M. Patre, "Feedforward-plus-sliding mode controller design with experimental application of

					coupled tank system", Transactions of the Institute of Measurement and Control (SAGE Publications), 01 Dec, 2013.
Pawar Sushant N.	PG	2013-14	Dissertation	Studies on Model Based Controller and Real Time Experimentation in Process Control Applications	**MODROB:** Design and Development of Adaptive controllers using Different Process Identification Techniques for on-line process Control Applications, 5.00 Lakhs, 2011-12.
Majumdar Kakoli	PG	2013-14	Dissertation	Some Studies on PID Controller Tuning for Process Control Applications	
Research Area: Control System, Fuzzy Based Control System, Faculty Member: Dr. B. M. Patre					
Research Scholar –					
V. M. Panchade	Ph. D	2018-19	Thesis	Sliding Mode Control Strategies for Induction Motors	**Publications:** 1. V.M. Panchade, R.H. Chile and B.M. Patre, "A survey on sliding mode control strategies for induction motors" Annual Reviews in Control, Vol. 37, Issue 2, pp289-307, 31 Dec, 2013.
G. V. Lakhekar	Ph. D	2018-19	Thesis	An Investigation of Adaptive Fuzzy Sliding Mode Control for Underwater Vehicles	**Publications:** 1. GV Lakhekar, LM Waghmare, "Adaptive fuzzy exponential terminal sliding mode controller design for nonlinear trajectory tracking control of autonomous underwater vehicle", International Journal of Dynamics and Control (Springer Berlin Heidelberg) January 2018, pp1-16. 2. GV Lakhekar, LM Waghmare, "Robust maneuvering of autonomous underwater vehicle: an adaptive fuzzy PI sliding mode control", Intelligent Service Robotics (Springer Berlin Heidelberg) July 2017, Volume 10, Issue 3, pp 195–212. 3. G. V. Lakhekar, L. M. Waghmare, P. S. Londhe,"Enhanced dynamic fuzzy sliding mode

					controller for autonomous underwater vehicles" International Symposium on Underwater Technology, National Institute of Ocean Technology,2014. **Book Chapter:** **1.** G. V. Lakhekar, L. M. Waghmare, "Diving Autopilot Design for Underwater Vehicles Using an Adaptive Neuro-Fuzzy Sliding Mode Controller", Advances and Applications in Nonlinear Control Systems, (Springer), 2015. 2. G. V. Lakhekar, L. M. Waghmare, "Dynamic fuzzy sliding mode control of underwater", Advances and Applications in Nonlinear Control Systems, (Springer), 2015.
Mangal H. Dhend	Ph. D	2018-19	Thesis	Some Studies & Investigation of Distribution System Monitoring & Fault Location In Smart Grid	**Patent:** (1) Use of smart meter for fault diagnosis in smart grid distribution systems Name: Dr. Dhend Mangal H. Patent No. 201821000249 A Date of Publish: 02/02/18 (2) Method of diagnosing faults in smart grid distribution system. Student Name: Dr. Dhend Mangal Hemant Patent No. 201821000250 A Date of Publish: 02/02/18 **Publications:** 1. Mangal Hemant Dhend, Rajan Hari Chile, "Fault diagnosis methodology in smart grid with distributed energy generation", IEEE International Conference on Renewable Energy Research and Applications (ICRERA), 2016, pp 885-890. 20 Nov, 2016. 2. Mangal Hemant Dhend, Rajan Hari Chile, "Efficient fault diagnosis in smart grid using non

					conventional mother wavelet function" PES Asia-Pacific Power and Energy Engineering Conference (APPEEC), 2016 IEEE, pp. 342-347, 25 Oct, 2016. 3. Mangal Hemant Dhend, Rajan Hari Chile, "Innovative scheme for smart grid distribution SCADA system" Future Energy Electronics Conference (IFEEC) (IEEE), 1 Nov 2015.
P. S. Londhe	Ph. D	2017-18	Thesis	Some Studies on control of Autonomous Underwater Vehicles	**Research Project:** Design of Intelligent Controllers for Under Water Autonomous Vehicles, NRB(DRDO), 22 June 2012, L. M.Waghmare/ B. M. Patre, Rs/- 54.61 Lakhs. **Publications:** 1. P.S. Londhe, S Mohan, B. M. Patre, L. M. Waghmare, "Robust task-space control of an autonomous underwater vehicle-manipulator system by PID-like fuzzy control scheme with disturbance estimator", Ocean Engineering(Elsevier), Volume 139, 15 July 2017, Pages 1–13. 2. Pandurang S Londhe, M Santhakumar, Balasaheb M Patre, Laxman M Waghmare, "Task space control of an autonomous underwater vehicle manipulator system by robust single-input fuzzy logic control scheme", IEEE Journal of Oceanic Engineering, Volume: 42, Issue: 1, 1 Jan. 2017. 3. P. S. Londhe, B. M. Patre, L. M. Waghmare, M. Santhakumar, "Robust proportional derivative (PD)-like fuzzy control designs for diving and steering planes control of an autonomous underwater

					vehicle", Journal of Intelligent & Fuzzy Systems, vol. 32, no. 3, pp. 2509-2522, 24 Feb, 2017. 4. PS Londhe, Yogesh Singh, M Santhakumar, BM Patre, LM Waghmare, "Robust nonlinear PID-like fuzzy logic control of a planar parallel (2PRP-PPR) manipulator", ISA Transactions (Elevier), Volume 63, 31 July 2016, Pages 218–232. 5. PS Londhe, Dinesh D Dhadekar, BM Patre, LM Waghmare, "Uncertainty and disturbance estimator based sliding mode control of an autonomous underwater vehicle", International Journal of Dynamics and Control(Springer Berlin Heidelberg), PP 1-17, July 2016. 6. P. S. Londhe, B. M. Patre and A. P. Tiwari, "Fuzzy-like PD controller for spatial control of advanced heavy water reactor", Nuclear Engineering and Design, Pages 77–89, July 2014. 7. Londhe P. S.; Patre B. M.; Tiwari A. P. "Design of Single-Input Fuzzy Logic Controller for Spatial Control of Advanced Heavy Water Reactor" Nuclear Science, IEEE Transactions on (Volume: 61 Issue: 2) April 2014, 901 – 911 ISSN :0018-9499.
S. P. Agnihotri	Ph. D	2017-18	Thesis	Time delay system (controller design)	**Publication:** **1.** S.P. Agnihotri, L.M. Waghmare, "Iterative algorithm and curve fitting technique for tuning with time delay system PID controller", Journal of Intelligent & Fuzzy Systems, Volume 29, Issue 4, pp 1527-1537, 23 Oct, 2015. **2.** S.P. Agnihotri, L.M. Waghmare, "Regression model for tuning the PID controller with fractional order time delay system", Ain Shams Engineering

					Journal Volume 5, Issue 4, December 2014, Pages 1071–1081.
Bhalerao Dinesh D.	PG	2017-18	Dissertation	Control of a class of Industrial Processes with Time Delay based on a Modified Uncertainty and Disturbance Estimator	
Jad Namrata	PG	2017-18	Dissertation	Detection of Moving objects using Fuzzy Color difference histogram based Background subtraction	**Publications:** **1**. Namrata V Jad, Satish T Hamde, "Fingerprint Identification with Combined Texture Features", Innovations in Electronics and Communication Engineering (Springer), PP:33-42., Feb. 2019
Milind Bongulwar	Ph.D	2016-17	Thesis	Some Studies on Design of Fractional Order Controllers for Control System Applications	**Publications:** 1. M.R. Bongulwar , B.M. Patre, , "Design of PIλDμ controller for global power control of Pressurized Heavy Water Reactor", ISA Transactions(Elsevier),24, April,2017. 2. M. R. Bongulwar, B. M. Patre, "Design of FOPID controller for fractional-order plants with experimental verification", International Journal of Dynamics and Control (Springer), P. No. 1-11 18 Feb, 2017 3. M. R. Bongulwar and B. M. Patre, "Stability Regions of Closed Loop Systems with One Non-Integer plus Time-Delay Plant by Fractional Order PID Controller", International Journal of Dynamics and Control, (Springer Publishers), pp. 1-9,16 July 2015. 4. A. K. Maurya, M.R. Bongulwar and B.M. Patre, "Tuning of fractional order PID controller for higher order process based on ITAE minimization", 2015 Annual IEEE India Conference (INDICON) pages 1-5, 17 Dec, 2015.

Sangita V. Kurundkar	Ph.D	2016-17	Thesis	Quality Of Service In Routing	Patent: AD-HOC Wireless Network and a Method for Reducing Energy need of the AD-HOC wireless network (IP Australia, Australian Government) Student Name: Mrs. Sangita Kurundkar Patent No. 201621019475 Status: Awarded. Publications: 1. Sangita Kurundkar, Sangeeta Joshi, Laxman Waghmare, "Performance Evaluation of Improved Directional Ad Hoc on Demand Distance Vector Routing Protocol" Wireless Personal Communications (Springer) November 2017, Volume 97, Issue 2, pp 1985–1996. 2. Sangeeta Kurundkar, Sangeeta Joshi, LM Waghmare, "Modeling and Statistical Analysis of Scenario Metric Parameters of Ad Hoc on Demand Distance Vector Routing Protocol", Wireless Personal Communications (Springer) September 2017, Volume 96, Issue 1, pp 183–197.
V. D. Hajare	Ph.D	2016-17	Thesis	Experimental Investigation of Robust Stability and Performance Analysis of Multivariable Systems	**Publications:** 1. V.D. Hajare, B.M. Patre, A.A. Khandekar, G.M. Malwatkar, "Decentralized PID controller design for TITO processes with experimental validation" International Journal of Dynamics and Control(Springer), Pages 1-13, 2016 2. VD Hajare, BM Patre, "Decentralized PID controller for TITO systems using characteristic ratio assignment with an experimental application" ISA transactions(Elsevier), Volume 59, Pages 385-397,30 Nov 2015. 3. VD Hajare, AA Khandekar, BM Patre, "Discrete sliding mode controller with reaching phase

					elimination for TITO systems", ISA Transactions (Elsevier), Volume 66,Pages 32–45.2 Nov, 2-16. 4. V. D Hajare and B. M. Patre, "Design of PID controller based on reduced order model and Characteristic Ratio Assignment method", International Conference on Control Applications (CCA),(IEEE) pp1270-1274, 28-30 Aug 2013. 5. V. D Hajare, B. M. Patre, "Design of decentralized PI controller based on Characteristic Ratio Assignment method For TITO process", 2013 Annual IEEE India Conference (INDICON), 13-15 Dec. 2013.
Aditi Bhelkar	PG	2016-17	Dissertation	Extraction of objects from MRI by using fuzzy logic	
Vikas Wadhai	PG	2016-17	Dissertation	Design of flow meter for heavy liquid metal	
Dipali Shinde-Shende	Ph.D	2015-16	Thesis	Development in model control	**Publications:** **1.** D. U. Shinde, S. T. Hamde, L. M. Waghmare, "Predictive PI control for multivariable non square system with multiple delays", International journal for Science and Advance Research in Technology (IJSART), Vol. 1, Issue 5, pp. 26-29, May 2015.
K. S. Holkar	Ph.D	2015-16	Thesis	Investigation of some predictive control strategies for improved process performance	**Publication:** 1. K.S. Holkar, L.M. Waghmare, G.V. Lakhekar, "Predictive sliding mode based cascade control for parametric uncertainty" International Journal of Dynamics and Control(Springer), Volume 3, Issue 4, pp 437-447, 1 Dec, 2015. 2. K. S. Holkar, L. M. Waghmare, Sliding Mode

					Control with Predictive PID Sliding Surface for Improved Performance" International Journal of Computer Applications Sep2013, Vol. 04, pp. 2013.
Potbhare Mangesh	PG	2015-16	Dissertation	Sliding Mode control for Mismatch Uncertainty System	
R. M. Nagrale	Ph.D	2014-15	Thesis	Fuzzy sliding mode control of uncertains nonlinear systems	**Publications:** **1.** R. M. Nagarale, B. M. Patre, "Exponential function based fuzzy sliding mode control of uncertain nonlinear systems" International Journal of Dynamics and Control, Volume 4, Issue 1, Pages 67-75, 01 Mar 2016 (Springer). 2. R. M. Nagarale and B.M. Patre , "Composite fuzzy sliding mode control of nonlinear singularly perturbed systems" ISA Transactions Volume 53, Issue 3, May 2014, Pages 679–689.
A. A. Khandekar	Ph.D	2014-15	Thesis	Sliding Mode Control Stategies for the control of Systems with time- delay	**Publications:** 1. B.B. Musmade, A.A. Khandekar, B.M. Patre, "Sliding mode control design for robust tracking of open loop stable processes with experimental application" International Journal of Dynamics and Control (Springer) Pages 1-10, 2016 2. V.D. Hajare, B.M. Patre, A.A. Khandekar, G.M. Malwatkar, "Decentralized PID controller design for TITO processes with experimental validation" International Journal of Dynamics and Control(Springer), Pages 1-13, 2016 3. A. A. Khandekar and B. M. Patre, "Decentralized Discrete Time Sliding Mode Control for TITO Systems with Time Delay with Experimental Application", International Journal of Dynamics and Control, (Springer Publishers), pp. 1-15, Aug., 2015.

					4. A.A. Khandekar and B.M. Patre, "Discrete sliding mode control for robust tracking of time-delay systems", Systems Science & Control Engineering, Vol. 2 , Iss. 1, 01 Dec, 2014. **Book Chapter:** **1**. A. A. Khandekar, B. M. Patre, "Design and Application of Discrete Sliding Mode Controller for TITO Process Control Systems" Advances and Applications in Sliding Mode Control Systems. (Springer) 2015.
R. K. Munje	Ph.D	2014-15	Thesis	Investigations of some spatial control strategies for advance heavy water reactor	**Publications:** **1**. Ravindra K Munje, Balasaheb M Patre, "Spatial Power Control of Singularly Perturbed Large Nuclear Reactor", Journal of Control Engineering and Applied Informatics, Vol.18, No. 3, pp. 22-29, 21 sept, 2016. **2**. R.K. Munje, B.M. Patre, P.S. Londhe, A.P. Tiwari, S.R. Shimjith, "Investigation of Spatial Control Strategies for AHWR: A Comparative Study" IEEE Transactions on Nuclear Science, Volume 63, Issue 2, Pages 1236-1246, April 2016. **3**. R. K. Munje, B. M. Patre, and A. P. Tiwari, "Discrete-Time Sliding Mode Spatial Control of Advanced Heavy Water Reactor" IEEE Transaction on Control System Technology, Vol. 24, No. 1, pp. 357-364, Jan 2016. (Impact Factor 2.521). **4**. R. K. Munje, J. G. Parkhe and B. M. Patre "Control of Xenon Oscillations in Advanced Heavy Water Reactor via Two-stage Decomposition", Annals of Nuclear Energy (Elsevier Publication), Vo. 77, pp. 326-334, 31 Mar 2015. (Impact Factor 0.960). **5**. R. K. Munje, B. M. Patre and A. P. Tiwari

					"Periodic Output Feedback for Spatial Control of AHWR: A Three-Time-Scale Approach", IEEE Transactions on Nuclear Science, Volume: 61, Issue: 4, Aug. 2014, Pages 2373 - 2382. **6.** R. K. Munje, B. M. Patre, A. P. Tiwari,'' Non-linear simulation and control of xenon induced oscillations in Advanced Heavy Water Reactor'' Annals of Nuclear Energy Volume 64, February 2014, Pages 191–200. **Book:** 1. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor (Book)" ISSN: 978-981-10-3013-1. **Book Chapter:** 1. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "Discrete-Time Sliding Mode Control", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor. (Springer). 2. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "Comparison of Spatial Control Techniques", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor. (Springer). 3. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "Sliding mode control", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor. (Springer). 4. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "Fast Output Sampling Technique", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor.

					(Springer). 5. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "Periodic Output Feedback", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor. (Springer). 6. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "State Feedback Control Using Pole Placement", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor. (Springer). 7. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "Modeling of AHWR and Control by Static Output Feedback", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor. (Springer). 8. Ravindra Munje, Balasaheb Patre, Akhilanand Tiwari, "State feedback control using linear quadratic regulator", Investigation of Spatial Control Strategies with Application to Advanced Heavy Water Reactor. (Springer).
Avinash Kumar Maurya	PG	2014-15	Dissertation	Fractional Order Based Control System	**Publications:** Avinash K. Maurya, M. R. Bongulwar, B. M. Patre, "Tuning Of Fractional Order PID Controller For Higher Order Process Based On ITAE Minimization", IEEE INDICON 2015.
Sachin S. Shende	PG	2014-15	Dissertation	Development Of Intelligent Controllers For Autonomous Underwater Vehicle	
Gayatri K. Vangal	PG	2014-15	Dissertation	Tuning of PID Controller Using Different tuning Method	
Rahul B. Lende	PG	2014-15	Dissertation	Development Of Intelligent Controllers For Autonomous Underwater Vehicle	

Aprajita Singh	PG	2013-14	Dissertation	Design of SIFLC for TITO Processes	
Nimbolkar Rupesh	PG	2013-14	Dissertation	Investigation of Some Control Strategies for the Depth of Control of AUV	
Rakshasmare Raju	PG	2013-14	Dissertation	Some Tuning Methods of PID Controllers for Different Processes	
Research Area: Biomedical Instrumentation **Faculty Member: Dr. S. T. Hamde, Dr. V. R. Thool**					
Research Scholar –					
Pratap S. Vikhe	Ph.D	2018-19	Thesis	Studies of Computer-Aided Diagnosis Schemes for Breast Cancer Detection	**Publications:** 1. P. S. Vikhe, V. R. Thool, "Morphological operation and scaled Réyni entropy based approach for masses detection in mammograms", Multimedia Tools and Applications (Springer), pp 1–26, 02 February 2018. 2. P. S. Vikhe, V. R. Thool, "Detection and Segmentation of Pectoral Muscle on MLO-View Mammogram Using Enhancement Filter", Journal of Medical Systems(Springer), 25 October 2017. 3. P. S. Vikhe and V. R. Thool, "Mass Detection in Mammographic Images Using Wavelet Processing and Adaptive Threshold Technique" January 2016, (Springer).
V. S. Rane	Ph.D	2017-18	Thesis	Masticatory force measurement and analysis	**Publications:** **1.** Vivek Rane, Satish Hamde, Ankush Agrawal, "Development of computerized masticatory force measurement system", Journal of medical engineering & technology (Taylor & Francis), Vol. 41, Issue 1, PP. 65-71, 2 Jan, 2017.
Sardeshpande	PG	2017-18	Dissertation	Stress Prediction System using	**Publications:**

Kaushik				Deep Neural Networks	Kaushik D. Sardeshpande, V.R. Thool, "Rainfall Prediction: A Comparative Study of Neural Network Architectures", Emerging Technologies in Data Mining and Information Security, Springer, pp: 19-28, 2019.
Kadam Piyush D.	PG	2017-18	Dissertation	Extraction of Retinal Blood Vassals from diabetic Retinography Imaginary	
Dosalwar Yugendra	PG	2017-18	Dissertation	Automatic Detection of Diseases using Deep Learning	
Bhaladhare Chitaranjan	PG	2017-18	Dissertation	Brain Tumor Detection by using Deep Learning	
R. K. Kanhe	Ph.D	2016-17	Thesis	ECG data compression and telemedicine	**Publications:** 1. Ram K Kanhe, Satish T Hamde, "Telemedicine using ECG data compression", International Journal of Telemedicine and Clinical Practices, Volume 2, Issue 3, pp. 267-291.(Inderscience Publishers IEL). 2. Ram K Kanhe, Satish T Hamde, "ECG signal compression using filter bank based on Hermite polynomial", International Journal of Computer Aided Engineering and Technology, 2017. 3. RK Kanhe, ST Hamde, "ECG signal compression using 2-D DWT Hermite coefficients", 2016 International Conference on Signal and Information Processing (IConSIP) IEEE, PP. 1-6 OCT, 2016. 4. R.K. Kanhe, S.T. Hamde, "Wavelet-based compression of ECG signals", International Journal of Biomedical Engineering and Technology, Vol. 14, Issue 4, pp 297-314, 01 Jan, 2014.
Aruna Deogire	Ph.D	2016-17	Thesis	Analysis of ECG Signal for measurement and detection of Q-T,S-T segments and T-wave	**Publications:** 1. Aruna Deogire and Satish Hamde, "Single vs. multi-lead performance of the Poincare mapping method for T-wave alternans detection,"

					Inderscience Enterprises Ltd., International Journal of Biomedical Engineering and Technology, vol.18, No.3, pp 240-253, 2015. 2. Aruna Deogire and Satish Tukaram Hamde, "Single vs. multi-lead performance of the Poincaré mapping method for T wave alternans detection", International Journal of Biomedical Engineering and Technology (IEL), Volume 18, Issue 3, pp. 240-253, 2015. 3. Aruna Deogire, Satish Hamde, "Effect of a multi-lead PCA approach on modified moving average method for T-wave alternans detection" Journal of medical engineering & technology, Vol. 38, Issue 8, pp 396-401, (Taylor & Francis) 01 Nov.,2014. 4. Aruna Deogire, S.T. Hamde, "T wave alternans, detection, quantification and pattern definition" Journal of Electrocardiology (Elsevier), Vol. 46, Issue 4, 01, July, 2013.
Ramyashri Ramteke	PG	2016-17	Dissertation	Human Stress Detection from ECG Signals	**Publications:** Ramyashri Ramteke, V. R. Thool, "Stress Detection of Students at Academic Level from Heart Rate Variability", International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS 2017).
Kalpana Vanjerkhede	Ph.D	2015-16	Thesis	Study of Effect of Diabetes on ECG	**Publications:** 1. V. Kalpana, S.T. Hamde, L.M. Waghmare, "ECG feature extraction using principal component analysis for studying the effect of diabetes" Journal of medical engineering & technology, Volume 37 Issue 2 116-126,2013.
Ingle Neha	PG	2015-16	Dissertation	Recognization of heart rate	

				variability in thyroid patients.	
Dighore Vishakha	PG	2015-16	Dissertation	Automatic Detection of Asthma using cough sound analysis	**Publications:** VD Dighore, VR Thool, "Analysis of Asthma by using Mel frequency cepstral coefficient", 2016 IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT), pp. 976-980, May, 2016
Bhalerao Manoj	PG	2015-16	Dissertation	Blind Source (speech) Separation of Acoustic Mixtures with Distributed Microphones	
Yedke Rai	PG	2015-16	Dissertation	Brain tumour detection and classifiction using discrete wavelet transform	
Ghule Pratapsinh	PG	2015-16	Dissertation	Automatic wheelchair control using speech processing algorithm	**Publication:** Pratapsinh Ghule, Manoj Bhalerao, R. H. Chile, ―Wheelchair Control Using Speech Recognition‖, 2016 Ninth International Conference on Contemporary Computing (IC3), 11-13 August,2016.
Kaldate Amruta	PG	2015-16	Dissertation	Magnetic Resonance Image Reconstruction from K-space data	**Publications:** **1.** Amruta Kaldate, B. M. Patre, ―MR image reconstruction based on compressed sensing using Poisson sampling pattern‖, Cognitive Computing and Information Processing (CCIP), 2016, 12-13 Aug. 2016.
Dhanshree Thulkar	PG	2014-15	Dissertation	Facial EMG	**Publications:** Dhanshree Thulkar, Tushar Bhaskarwar, S. T. Hamde, "Facial Electromyography for Characterization of Emotions using LabVIEW" 2015 International Conference on Industrial Instrumentation and Control (IEEE/ICIC), pp.683-686, May 2015
Sachin S. Patil	PG	2014-15	Dissertation	Isolated Word Recognition using	

				Spectrogram Analysis and its Application in Voice Controlled Wheelchair	
Shital A. Walke	PG	2014-15	Dissertation	Respiratory Sound Analysis	**Publications:** SA Walke, VR Thool, "Differentiating nature of cough sounds in time domain analysis", 2015 International Conference on Industrial Instrumentation and Control (IEEE/ICIC), pp 1022-1026, May 2015.
Sachin B. Babhale	PG	2014-15	Dissertation	Development of Speech Recognition Algorithm and its application for Voice Controlled Wheel Chair	
Chandrappa Bhyri	Ph.D	2013-14	Thesis	Use of disease coding and scoring patterns for diagnosis of heart diseases	
Choudhary Shikha	PG	2013-14	Dissertation	Analysis and Classification of ECG Waveforms for Detection of Cardiac Problems	**Publications:** Shikha Choudhary, ST Hamde, "A simple and robust algorithm for the detection of QRS complexes", 2015 International Conference on Industrial Instrumentation and Control (IEEE/ ICIC), pp. 870-872, May, 2015.
Agham Nishigandha	PG	2013-14	Dissertation	Real Time Monitoring of Patients Parameter using Lab View	**Publications:** N. D. Agham, V. R. Thool, R. C. Thool, "Mobile and web based monitoring of patient's physiological parameters using LabVIEW", 2014 Annual IEEE India Conference (INDICON), pp.1-6, Dec, 2014.
Research Area: Signal and image Processing **Faculty Member: Dr. R. S. Holambe, Dr. R. V. Sarwadnya, Dr. V. G. Asutkar**					
Research Scholar –					

Swati Madhe	Ph.D	2017-18	Thesis	Iris Recognition For Person Authentication	**Publications:** 1. Swati P Madhe, Bhushan D Patil, Raghunath S Holambe, "On the Design of Arbitrary Shape Two-Channel Filter Bank Using Eigenfilter Approach" Journal of Circuits, Systems, and Signal Processing (Springer US), 23 Feb, 2017.
Patil Sneha	PG	2017-18	Dissertation	Bone Tumor Segmentation by using Superpixels	
Bhimte Namrata R.	PG	2017-18	Dissertation	Detection and Classification of Pests using Image Processing	**Publications:** NR Bhimte, VR Thool, "Diseases Detection of Cotton Leaf Spot Using Image Processing and SVM Classifier", 2018 Second International Conference on Intelligent Computing and Control Systems (IEEE/ICICCS), pp.340-344, 14 June, 2018.
J. P. Gawande	Ph.D	2016-17	Thesis	Spectroscopy analysis: Orthogonal transformation based methods	**Publication:** **1.** J. P. Gawande, A. D. Rahulkar and R. S. Holambe, "Design of regular biorthogonal wavelet filter banks using generalized and hybrid lifting structures" Signal Image and Video Processing Volume 9, Issue 7, October 2015 (Springer).
Sanjeevani Jadhav	PG	2016-17	Dissertation	The New Approach of ICA and Measures of Nongaussianity in application of Signal Separation	
Jasmeet Kaur Hundal	PG	2016-17	Dissertation	Speech Recognition based application using TMS320C6713	**Publications:** Jasmeet Kaur Hundal, Dr. S. T. Hamde, "Some Feature Extraction Techniques For Voice Based Authentication System"
Rupali Shirsat	PG	2016-17	Dissertation	Histogram of Oriented Lines for Palmprint Recognition	

Mehtre Sadashiv B.	PG	2015-16	Dissertation	Embedded System for Biometric Online Signature Verification	
Ambhore Hrishikesh S.	PG	2015-16	Dissertation	Design and Development of Dual wavelength based chlorophyll measurement system	
Bhalerao Manoj G.	PG	2015-16	Dissertation	Blind Source (speech) Separation of Acoustic Mixtures with Distributed Microphones	
Tidke Mahesh	PG	2015-16	Dissertation	Finger Print Image Enhancement, Verification and Gender Classification Using Wavelet Transform	
Dabhade Nikhil	PG	2015-16	Dissertation	Development of Robust and Efficient IRIS Recognition System using Raspberry-PI	
Chavan Siddheshwar	PG	2015-16	Dissertation	Speech Recognition by Wavelet Algorithm	
A. K. Naik	Ph.D	2014-15	Thesis	Optimal compression and encryption techniques for teleisometric systems	**Publication:** 1. A. K. Naik, R. S. Holambe, "A unified framework for the design of low-complexity wavelet filters", Volume 15, Issue 06, November 2017 2. A. K. Naik, R. S. Holambe, "Joint Encryption and Compression scheme for a multimodal telebiometric system", Neurocomputing, Available online 4 February 2016, ISSN 0925-2312 (Elsevier). 3. A. K. Naik and R. S. Holambe, "New Approach to the Design of Low Complexity 9/7 Tap Wavelet Filters With Maximum Vanishing Moments", IEEE Transactions On Image Processing, VOL. 23, NO. 12, December 2014, pp 5722-5732.
N. P. Jawarkar	Ph.D	2014-15	Thesis	Design and Implementation of supervised and unsupervised automatic speaker recognition	**Publications:** 1. N. P. Jawarkar, R. S. Holambe, T. K. Basu, "Effect of Nonlinear Compression Function on the

				system in Indian languages	Performance of the Speaker Identification System under Noisy Conditions", Proceeding PerMIn '15 Proceedings of the 2nd International Conference on Perception and Machine Intelligence Pages 137-144, 26 Feb, 2015. 2. N. P. Jawarkar, R. S. Holambe, T. K. Basu, "On the use of classifiers for text-independent speaker identification", International Conference on Automation, Control, Energy and Systems (ACES), 2014 IEEE 1-2 Feb. 2014. 3. N. P. Jawarkar, R. S. Holambe, T. K. Basu., "Unsupervised Speaker Segmentation and Clustering Using TESBCC and Pitch Based Features", 5th International Conference on Computational Intelligence and Communication Networks (CICN), 2013 27-29 Sept. 2013 Pp 215 – 219. 4. Jawarkar Naresh, Raghunath S Holambe, Tapan Kumar Basu, "Unsupervised Speaker Segmentation and Clustering Using TESBCC and Pitch Based Features", 5th International Conference on Computational Intelligence and Communication Networks (CICN)(IEEE), 2013, pp 215-219, 27 Sept,2013.
Sunny A. Neve	PG	2014-15	Dissertation	Bulk-Boort Multilevel Inverter	**Publications:** S. A. Neve, V. G. Asutkar, "Lower order harmonic reduction in eleven level inverter with buck topology", 2015 International Conference on Computer, Communication and Control (IC4) pp. 1-6, Sept, 2015.
Amol G. Lolure	PG	2014-15	Dissertation	Feature Extraction & Emg Signal Using Wavelate Analysis	**Publications:** Amol Lolure, VR Thool, "Wavelet transform based EMG feature extraction and evaluation using scatter graphs", 2015 International Conference on Industrial

					Instrumentation and Control (ICIC), pp.1273-1277, May 2015.
Nachiket Gondhalekar	PG	2014-15	Dissertation	Iris Based Attendance System	
Nagare Mukund	PG	2013-14	Dissertation	Human Face Detection and Recognition System	
Wale Sachin S.	PG	2013-14	Dissertation	System Identification using Wavelet Connection Coefficient	**Publications:** Sachin S Wale, Vinayak G Asutkar, "Evaluation of wavelet connection coefficients by wavelet-Galerkin approximation", 2014 Annual IEEE India Conference (INDICON), pp. 1-6, Dec 2014.
Biyani Roopali	PG	2013-14	Dissertation	Screening Methods for Early Detection of Diabetic Retinopathy	
Ubale Sonappa	PG	2013-14	Dissertation	Iris Recognition System: Half Iris Feature Extraction & Recognition	
Research Area: Industrial Automation **Faculty Member: Dr. B. M. Patre, Mr. J. G. Parkhe**					
Research Scholar-					
Suryawanshi Rajdeep	PG	2017-18	Dissertation	Design and Installation of HVAC system at FRDCS control room using PLC	
Ghumnar Nitinkumar J.	PG	2017-18	Dissertation	Migration Project: Honeywell TDC 3000to EPKSR432 system	
Pannu Jaspreetkaur	PG	2017-18	Dissertation	Design and Development of Automatic Testing kit for switch, Fan and LED using PLC with data logger and report generation	
Sainath Pashawar	PG	2016-17	Dissertation	Development of PLC and SCADA based control system for air leak testing of components	

Juily Vispute	PG	2016-17	Dissertation	Design of PLC and SCADA based control system for leakage testing of components	
Shripad Giri	PG	2014-15	Dissertation	Development And Control of The Process Instrumentation Skid Using Yokogawa DCS	**Publications:** Tushar V. Bhaskarwar, Shripad S Giri, R. G. Jamakar, "Automation of shell and tube type heat exchanger with PLC and LabVIEW" International Conference on Industrial Instrumentation and Control (ICIC) COE Pune, India, pp 841-845, May 28-30, 2015
Tushar Bhaskarwar	PG	2014-15	Dissertation	Automation of Heat Exchanger Using Plc & Yokogawa Centum Vp DCS	**Publications:** Tushar V. Bhaskarwar, Shripad S Giri, R. G. Jamakar, "Automation of shell and tube type heat exchanger with PLC and LabVIEW" International Conference on Industrial Instrumentation and Control (ICIC) COE Pune, India, pp 841-845, May 28-30, 2015
Mali Sumit	PG	2013-14	Dissertation	Reconstituted Milk Handling Automation using Distributed Control System (Delta-V)	
Waghmare Rohan	PG	2013-14	Dissertation	Study of Distributed Control System (Delta-V) and Implementation using Associated Tools	
Aundhekar Ashish	PG	2013-14	Dissertation	Automation of Continuous Stirrer Tank Reactor using Yokogawa DCS	
Research Area: Agriculture Instrumentation **Faculty Member: Dr. V. R. Thool, Ms. S. R. Nandurkar**					
Research Scholar –					
Prajakta Dhutraj	PG	2016-17	Dissertation	Control of inside Temperature in Greenhouse by PID and PI-intelligent	**Publications:** 1. Prajakta Dhutraj, V. R. Thool,‖ Greenhouse temperature control using fuzzy self tuned PID

					controller‖, International Conference on technological advances in climate smart agriculture and sustainability (TACSAS-2017), 16-18 Jan, 2017. 2. Prajakta Dhutraj, V. R. Thool,‖ Automated Greenhouse System based on speech recognition‖, International Conference on technological advances in climate smart agriculture and sustainability (TACSAS-2017), 16-18 Jan, 2017.

S G G S Institute of Engineering and Technology, Vishnupuri, Nanded

Date: 24.05.2019

Details of patents filed by **Faculty Members** and **Students**, of this Institute:

Sr. No.	Name of the Patent	Application/ File No.	Application status	Complying Person	Date of patent Filing/ Grant	Inventors
1.	AD-HOC WIRELESS NETWORK AND A METHOD FOR REDUCING ENERGY NEED OF THE ADHOC WIRELESS NETWORK	2016210194 75	granted the above patent on 4 August 2016 (Australian Patent)	Kurundkar, Sangita;	7 June 2016	Kurundkar, Sangita; Joshi, Sangeeta and Waghmare, Laxman
2.	A PROCESS FOR ELECTROLESS COMPOSITE COATING	217845	Granted	--------	31.01.2001/ 29.03.2008	Dr. S. B. Sharma **Department of Production Engineering,** Ramesh C. Agrawal, Vijaya Agarwala, Indian Institute of Technology, Roorkee Dr. Kestur Gundappa Satyannarayana, Regional Research Laboratory, Thiruanthapuram
3.	CENTER OF EXCELLENCE SIGNAL AND IMAGE PROCESSING (LOGO)	2936654	TRADE MARK Registered	Dr. Lenina Vithalrao Birgale	07/04/2015	1712683 SHRI GURU GOBIND SINGHJI INSTITUTE OF ENGINEERING AND TECHNOLOGY Trading As : Shri Guru Gobind Singhji Institute of Engineering and Technology
4.	SHRI GURU GOBIND SINGHJI INSTITUTE OF ENGINEERING AND TECHNOLOGY(LOGO)	2936027	TRADE MARK Registered	Dr. Lenina Vithalrao Birgale	06/04/2015	1712683 SHRI GURU GOBIND SINGHJI INSTITUTE OF ENGINEERING AND TECHNOLOGY Trading As : Shri Guru Gobind Singhji Institute of Engineering and Technology
5.	AN IONIC POTENTIAL POWER GENERATION SYSTEM	355/MUM/2012	**Application Awaiting Examination**	Aniket G. Morey,	08.02.2012	Dr. B. M. Patre, and Aniket G. Morey, **Department of Instrumentation Engineering**
6.	DOUBLE FOCUS SPOT PICK-UP FOR ACOUSTIC SIGNAL	2563/MUM/2015	Complete filing	Dr. Lenina Vithalrao Birgale	3rd July, 2015	Mr. Atul Joshi Dr. B.M Patre
7.	MAGNETIC PRIME MOVER	2016210199 03	Provisional filing	Dr. Lenina Vithalrao Birgale	10/06/2016	Ajinkya Dhariya Dr. JVL Venkatesh
8.	DESIGN GUIDELINES FOR RAPID MIXER OF WTP USING WATER JET	2857/MUM/2014	**Application Awaiting Examination**	Santosh Kalaskar	09.09.2014	Dr. Lakshmanagouda Govindappa Patil, Santosh Hanumanji Kalaskar **Department of Civil and Water Management Engineering.**
9.	THE INNOVATIVE METHOD TO PRODUCE ELECTRIC POWER BY USING PRESSURE OF SHOES.	2730/MUM/2014	**Application filed**	Vishal Undre	26.08.2014	Chetan Ramesh Mule, Rajkumar Premsing Pawar, Rahul Narayan Dhole, Kshitij Ratnakar Bonkinpelliwar, Vishal Shivaji Undre, Dr.L.M.Waghmare, Dr.V.B.Tungilar, Dr.S.B.Sharma, Dr.Rajan H. Chile, Dr. Ravindra C. Thool **Department of Instrumentation Engineering, Production Engineering, Electrical Engineering & Information Technology.**
10.	SMART FAN	2524/MUM/2014	**Application filed**	Rahul Tamshete	06.08.2014	Rahul Bhimashankar Tamshete Dr. L.M.Waghmare, Dr.V.G.Asutkar **Department of Instrumentation Engineering**
11.	INNOVATIVE TRUCK LOAD ASSESSMENT SYSTEM.	2525/MUM/2014	**Application filed**	Rahul Tamshete	06.08.2014	Rahul Bhimashankar Tamshete Dr.L.M.Waghmare, Dr.V.G.Asutkar **Department of Instrumentation Engineering**
12.	THE HIDING SPEED-BREAKER	2461/MUM/2014	**Application filed**	Vishal Undre	31.07.2014	Dr.R.H.Chile, Dr.R.C.Thool, Manoj K.Patil, Chetan R. Solanki, Satish R. Pawale, Rahul N. Dhole, Ajaysingh T. Chandan, Vishal S. Undre, Snehal R. Deshmukh, **Department of Electrical Engineering & Information Technology**
13.	DELINTING OF COTTONSEED BY HCL GAS AND NEUTRALIZATION BY CAUSTIC SODA INSTEAD OF AMMONIA.	2026/MUM/2014	**Examination report awaited**	Pratik Tumme	24.06.2014	Pratik Ramesh Tumme, Dr. P. G. Jadhav **Department of Chemical Engineering,**
14.	DESIGN OF EQUIPMENT FOR GAS-GAS, GAS-SOLID AND GAS-SOLID-GAS REACTIONS.	2025/MUM/2014	Examination report received & queries compliance submitted	Pratik Tumme	24.06.2014	Pratik Ramesh Tumme **Department of Chemical Engineering** Dr. V. B. Tungikar **Department of Production Engineering,**
15.	TRAFFIC SIGNAL ON ZIG-ZAG ROAD	1292/MUM/2014	**Application filed**	Vishal Undre	09.04.2014	Dr. R. C. Thool, Pawale Satish R., Solanki Chetan R., Vishal Undre, Rahul Dhole **Department of Information Technology**
16.	MICRO-CONTROLLER BASED AUTOMATED JIG & FIXTURE FOR	842/MUM/2014	**Application filed**	Abhale Nilesh S. & Patil Sagar	13.03.2014	Abhale Nilesh S., Patil Sagar S. and Dr. V. B. Tungikar **Department of Production Engineering,**

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	CURVED SURFACE DRILLING WITH INDEXING ATTACHMENT			S.		
17	DIGITALLY CONTROLLED REGULATED POWER SUPPLY	1313/MUM/2014	**Application filed**	Vishal Undre	26.02.2014	Dr. R. C. Thool, Pawale Satish R., Solanki Chetan R., Vishal Undre, Rahul Dhole **Department of Information Technology**
18	INNOVATIVE METHOD OF EMISSION REDUCTION OF DIESEL ENGINE USING CERIUM OXIDE AS A FUEL ADDITIVE	102/MUM/2014	**Examination report received**	V. M. Nandedkar Ingle Sumdh S	13.01.2014	Dr. V. M. Nandedkar **Department of Production Engineering.**
19	A NOVEL ARTIFICIAL GROUNDWATER RECHARGE UNIT	664/MUM/2015	Application Awaiting Examination	.Dr. Nilkanth Hanmantrao Kulkarni	28/02/2015	1.Dr. Nilkanth Hanmantrao Kulkarni 2. Nayan Sureshraoji Pund 3. Prashant Manohar Tamboli
20	ELECTRICAL POWER THEFT MONITORING AND DETECTION SYSTEM.	3473/MUM/2014	**Application filed**	Krishna Phad & Kushal Chakraborty	3 Nov 14	Kushal Chakraborty, Sushil Ashokrao Mule, D. Krishna Phad, Shubham Y. Meharkure, Mohammad Umar Zubair, (All students - B.Tech. Electrical), Dr.L.M.Waghmare, Dr.Rajan H. Chile, **Electrical Engineering Department.**
21	ELECTRICITY GENERATION BY GRAVITATIONAL ACCELERATION	2855/MUM/2014	**Application filed**	Ghogare Suraj	08.09.2014	Prof. Rodge Manik Kishanrao, Bombade Balaji Rajendra, Ghogare Suraj Bhiwaraj, Shinde Sarita Venkatrao Lathkar Yogesh Sureshrao, Undre Vishal Shivaji, Dhole Rahul Narayan **Department of Production Engineering, Computer Science and Engineering.**
22	DUSTBIN STAND	265137	**Application filed**	Vishal Undre		Chetan Ramesh Mule, , Rahul Narayan Dhole, Kshitij Ratnakar Bonkinpelliwar, Vishal Shivaji Undre, Dr.L.M.Waghmare, Dr.V.B.Tungilar,
23	SOLAR TURMERIC BLANCHER	201721022352/13680	**Application filed**	Tungikar Vinod B.	27/06/2017	Dr.Tungikar Vinod B., Department of Production Engineering

(Dr. Y.V.Joshi)
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LIST OF MoU Signed by SGGSIE&T, Nanded

Sr.No.	Year	No. of MoU Signed	Remarks
01	2018-19	08	
02	2016-17	19	
03	2015-16	11	
04	2014-15	07	
05	2013-14	11	
	TOTAL	**54**	

Sr.No	Name of Industry	Date of signing MOU	Period
1	CMIA-MAGIC (Chamber of Marathwada Industries and Agriculture- Marathwada Accelerator for Growth & Incubation Council), Aurangabad	06-02-02019	**(2018-2019)** **Total 08 MoU**
2	NIMA (Nashik Industries and Manufacturers Association, Nashik)	05-02-2019	
3	Chipspirit, Banglore	02-02-2019	
4	Hydro-Envi Pvt. Ltd. (Incubator):	27-11-2019	
5	Solace Cogen (P) Ltd. Mumbai	19-11-2018	
6	John Deere India Private Ltd. Pune	25-10-2018	
7	**Giz-MASSIA** GIZ is a German development agency headquartered in Bonn and Eschborn	19-10-2018	
8	Indus Aviation Systems LLP Pune	15-10-2018	
9	New Indictrons Technology Private Ltd., Pune	27-03-2017 27-04-2017	**(2016-2017)** **Total 06+13=19 MoU**
10	Techprimelab Software Pvt. Ltd., Pune	27-03-2017 27-04-2017	
11	Aspire Talent Search, C-103,Venkateshg Serenity , Near DSK Vishwa gate , Dhayari , Singhad road , Pune	27-04-02017	
12	UB CABLES, Gat.No.189,behind jyotiba mangal karyalaya, jyotiba nagar, Talawade , Pune	27-04-02017	
13	Imasion Technologies Pvt.Ltd, Pune	27-04-02017	
14	Ashwath Technosystems Manifesting Solutions & SADGAMAYA, L-square , office no-3, first floor , sanghvi nagar , parihar chowk , aundh , pune	27-04-02017	

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Sr.No	Name of Industry	Date of signing MOU	Period
15	Thought Craft Pvt.ltd, Pune	27-04-02017	(2016-2017) Total 06+13=19 MoU
16	Maritime Research Centre, Pune (Indian Maritime Foundation, Pune)	22-03-17	
17	College of Engineering, Pune (01/10/2014 revised on 10/03/2017)	10-03-17	
18	M/s Endress + Hauser India Pvt. Ltd.	20-02-17	
19	Expert Global Solution Pvt. Ltd. Aurangabad	25-01-17	
20	Institute for Global Agriculture and Technology Transfer (IGATT) Colorado USA	18-01-17	
21	Cygni Digital Concepts Private Limited, Sasane nagar, Hadapsar, Pune	18-01-17	
22	Emerson Process Management (India) Pvt. Ltd., Powai, Mumbai	24-12-16	
23	Government College of Engineering, Jalgaon	15-12-16	
24	Tata Consultancy Services Limited, TCS House, Reveline Street, Fort, Mumbai - 400 001	09-12-16	
25	ADCIS, 3, rue Martin Luther King, 14280, Saint-Contest-France	06-10-16	
26	DKTE Societys Textile and Engineering Institute (DKTE) Rajwada Ichalkaranji - 416 115 Post Box No. 130 Dist Kolhapur (Maharashtra)	11-08-16	
27	Tata Memorial Centre, Dr. E Borges Road, Parel, Mumbai - 400 012	13-06-16	
28	Oakland University located in Rochester, Michigan ("OU")	11-05-16	(2015-2016) Total 5+6=11 MoU
29	Dr. Jankharias Imaging Centre, Mumbai	02-05-16	
30	Tata Consultancy Service Ltd., Mumbai	27-02-16	
31	Sparkviee Fine Chemicals Pvt. Ltd. Hydrabad	18-02-16	
32	Power Research and Development Consultants Pvt. Ltd., Bangalore	15-02-16	

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Sr.No	Name of Industry	Date of signing MOU	Period
33	Institute of Technology Petronas SDN BHD (352875-U)	15-01-16	(2015-2016) Total 5+6=11 MoU
34	Civil Engineering Department, The City University of New York, New York, USA	29-10-15	
35	CREST Institute, The City University of New York, New York, USA	21-09-15	
36	Professors from IIT Roorkee	19-09-15	
37	SAN JOSE STATE UNIVERSITY, San Jose, California, USA	10-08-15	
38	Ekalakshya VLSI R & D Centre Pvt. Ltd, Hubli (EKLAKSHYA)	04-08-15	
39	Oracle India Pvt. Ltd., Bangalore	19-02-15	(2014-2015) Total 07 MoU
40	Ahmednagar Auto and Engineering Association, Ahmednagar	12-02-15	
41	Mentor Graphics,	05-01-15	
42	N.Kenin Transformers, C/o, F-11, Behind Navjeevan Tyres, MIDC, Latur	26-07-14	
43	V.N.I.T., Nagpur	10-06-14	
44	SandRiver Technologies Pvt. Ltd., Pune	27-05-14	
45	Institute of Chemical Technology (ICT), Mumbai	01-04-14	
46	Laurus Infosystems Ltd, Bangalore	21-02-14	(2013-2014) Total 11 MoU
47	Sardar Patel College Engineering (SPCE), Mumbai	10-01-14	
48	National Knowledge Network (NKN), National Informatics Centre (NIC), DIT, Lodi Road, New Delhi - 110 003	05-01-14	
49	VJTI, Mumbai	08-10-13	
50	Universiti Teknologi Petronas (UTP), Malaysia	27-08-13	
51	3D PLM Software Solutions Ltd., Pune	05-08-13	
52	Practical Vision Consultant, Aurangabad	02-08-13	
53	SRTMU, Nanded	25-07-13	
54	SPJ Embedded Technologies Pvt. Ltd. Pune.	13-02-13	
55	Walchand College of Engineering, Sangli	14-01-13	
56	D-Link, Mumbai	29-10-12	

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Sr.No	Name of Industry	Date of signing MOU	Period
57	NVIDIA, Panchshil Tech. Park, Shivajinagar, Pune	19-07-12	
58	Tata Consultancy Service Ltd., Mumbai	12-06-12	
59	Texas Instruments Lab, Bangalore	14-07-10	
60	University of Glasgow, UK, and National institute of Technology Jalander	01-06-06	

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Research ECO System in the Center of Excellence in Signal and Image Processing: Research Groups

Research Area: Retinal Image Analysis Faculty Member: Dr. Manesh Kokare					
Research Scholar – 1: Prasanna Porwal					
Student Names	**UG/PG**	**Year**	**Project Type**	**Project Title**	**Outcome (Publication)**
Janabai Parekar	M.Tech	2015-16	Dissertation	Retinal Image Registration	Janabai Parekar, Prasanna Porwal, and Manesh Kokare. "Automatic retinal image registration using fully connected vascular tree." In International Conference on Signal and Information Processing (IConSIP), pp. 1-5. IEEE, 2016
Samiksha Pachade	M.Tech	2016-17	Dissertation	Retinal Vessel Segmentation	Samiksha Pachade, Prasanna Porwal, and Manesh Kokare. "A Novel Unsupervised Framework for Retinal Vasculature Segmentation." In Advanced Computational and Communication Paradigms (Springer LNEE), pp. 490-497, vol 475. Springer, Singapore, 2018.
Pratiksha Biradar	B.Tech	2016	Summer Internship	Exudate Detection	-
Ajay Jadhav	B.Tech	2016	Summer Internship	Haemorrhage Detection	-
Gayatri Jajan	B.Tech	2016	Summer Internship	Microaneurysms Detection	-
Atharva Kadethankar	B.Tech	2017-18	Final year project	Glaucoma Diagnosis	Apurv Joshi, Atharva Kadethankar, Vedant Patwardhan, Prasanna Porwal, Samiksha Pachade, Manesh Kokare, "Glaucoma Screening Through Level Set for Optic Disc Segmentation and Textural Features for Classification." In 2018 International Conference on Intelligent and Advanced System (ICIAS), pp. 1-6. IEEE, 2018.
Apurv Joshi	B.Tech	2017-18			
Vedant Patwardhan	B.Tech	2017-18			
Research Scholar – 2: Samiksha Pachade					
Rashmi Raut	B.Tech	2017-18	Final year project	Laser Scar Detection	Rashmi Raut, Visharad Sapate, Abhay Rokde, Samiksha Pachade, Prasanna Porwal and Manesh Kokare, "Laser Scar Classification in Retinal Fundus Images using Wavelet Transform and Local Variance", In International Symposium on Computer Vision and Machine Intelligence in Medical Image Analysis (ISCMM-2019 - Springer AISC - Presented).
Abhay Rokade	B.Tech	2017-18			
Visharad Sapate	B.Tech	2017-18			
Research Scholar – 3: Ravi Kamble					
Sushma Kulkarni	M.Tech	2017-18	Dissertation	Retinal Field of View detection	Kulkarni, Sushma, Ravi Kamble, and Manesh Kokare. "Automatic field of view extraction with variable enhancement of color fundus images." In 2017 14th IEEE India Council International Conference (INDICON), pp. 1-5. IEEE, 2017.

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Research Area: Medical Image Processing Faculty Member: Dr. Sanjay Talbar					
Research Scholar – 1: Ganesh Singadkar					
Student Names	**UG/PG**	**Year**	**Project Type**	**Project Title**	**Outcome (Publication)**
Akshay Dudhane	M.Tech	2016-17	Dissertation	Lung disease classification	Dudhane, A., Shingadkar, G., Sanghavi, P., Jankharia, B., & Talbar, S. (2016, December). Interstitial lung disease classification using feed forward neural networks. In International Conference on Communication and Signal Processing 2016 (ICCASP 2016). Atlantis Press. Dudhane, A. A., & Talbar, S. N. (2018). Multi-scale directional mask pattern for medical image classification and retrieval. In Proceedings of 2nd International Conference on Computer Vision & Image Processing (pp. 345-357). Springer, Singapore.
Research Scholar – 2: Suhas Sapate					
Neha Todawale	M.Tech	2018-19	Dissertation	Breast Cancer detection and Classification	--
Research Scholar – 3: Ujjwal Baid					
Sneha Mote	M.Tech	2016-17	Dissertation	Brain tumor Segmentation	S. R. Mote, U. R. Baid and S. N. Talbar, "Non-negative matrix factorization and self-organizing map for brain tumor segmentation," 2017 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET), Chennai, 2017, pp. 1133-1137. doi: 10.1109/WiSPNET.2017.8299940
Siddhesh Thakur	B.Tech	2018-19	Final Year project	Brain tumor Segmentation and Overall Survival prediction	Selected as intern at Perelman school of medicine, university of Pennsylvania, USA for 6 months

Research Area: EEG Analysis Faculty Member: Dr. Ramchandra Manthalkar					
Research Scholar – 4: Shankar Gupta					
Sagar P. Dhage	B.Tech	2018-19	Final year project	Effect of Meditation on cognitive workload using EEG signals	-
Tushar G. Tangle	B.Tech	2018-19			
Vishal Vishwambhar	B.Tech	2018-19	Final year project	EEG signal processing and analysis	-
Shruti Kulkarni	B.Tech	2018-19			
Diksha Joshi	M.Tech	2018-19	Dissertation	Motor Imagery tasks enhancement	-
Anand A. Deshmukh	M.tech	2018-19	Dissertation	Classification of cognitive loads under visual stimulation	-
Nikhil R. Thokal	M.Tech	2018-19	Dissertation	Classification of Visual cognitive load using EEG signals.	-

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Research ECO System in the department of production engineering: Research Groups

Research Area: Solar Energy Faculty Member: Dr. V.B.Tungikar					
Research Scholar – 1: D.S.Malwad					
Student Names	**UG/PG**	**Year**	**Project Type**	**Project Title**	**Outcome (Publication)**
Akash Salve	PG	2017-18	Dissertation	Role of reflector material in performance of CPC	
Raitesh Hortikar	PG	2018-19	Dissertation	Experimental and numerical study of receiver for scheffler dish reflector	
Vivek Mali Aniket More Rupesh Wankhede	UG	2018-19	Final year project	Solar Energy Utilization for Jaggery Production	
Madhav P Mekale Sujeet B Dhopare	UG	2018-19	Final year project	Effluent Treatment using Solar Energy	
Research Scholar – 2: Masnaji Nukulwar					
Imran Hasan	PG	2018-19	Dissertation	Solar Dryer analysis	--
Vaibhav Kadu Rohit Kuwar Yeshwant Patil Balaji Lolge	UG	2018-19	Final year project	Solar Dryer	
Research Area: Composite Materials Faculty Member: Dr. V.B.Tungikar					
Research Scholar – 1: E.S.Agrawal					
Dipesh Mahajan Shubham Rengade	UG	2015-16	Final year project	Design of Centrifugal Casting setup for MMC	"Design and fabrication of a centrifugal casting for manufacturing of MMC", ICAM-ASD 2016, SGGSIE&T Nanded, 6-8 Oct 2016
Digvijay Rathod	PG	2018-19	Dissertation	Characterization of MMC Al-SiC	
Sumit R Salunkhe Bhagyashree P Husey Atul B More Kunal D Chaudhari	UG	2018-19	Final year project	Design and Fabrication of Stir casting furnace for MMC preparation	

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Research Scholar – 2: Anuja Karle					
Omkar Mandawad	UG	2018-19	Final year project	Fabrication and Characterization of epoxy composites filled with woolastonite powder	
Sagar Patil	UG	2018-19	Final year project	Fabrication and mechanical testing of glass epoxy and wollastonite powder filled glass epoxy composites	
Research Area: Advanced Machining Faculty Member: Dr. B.M.Dabade					
Research Scholar – 1: R.B.Bhosale					
Joshi Pushkar Dudhe Vaishnavi Hundiwala Shivani	UG	2015-16	Final year project	Fabrication of micro-slits using Micro-EDM and parameter optimization	Parametric Optimization of Micro-EDM during Micro-Slits Generation on Inconel 600 using CCD and GRA COPEN 10, IIT Madras Dec. 2016

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Industry Sponsored Laboratory at SGGSIE&T, Nanded

George H. Endress Innovation at a glance Process Instrumentation Lab

The Swiss automation giant Endress+Hausers Pvt. Ltd., India (E+H) has sponsored and set up a process instrumentation laboratory called Dr. Georg H. Endress "Innovation at Glance" at Nanded based Shri Guru Gobind Singhji (SGGS) Institute of Engineering & Technology.

The Lab is equipped with SKID Technology which will enable students to get hands on actually machines before setting out into the industry. The technology is worth Rs. 50 Lacks and will help students learn about quality and Quantity measurements of flowing substances. The SKID covers major Technologies used in the modern day Process plant globally. The technology includes flow which predominantly uses coriolis-based mass flow meters, electronic magnetic type flow meter and vortex type flow meter. It also has radar based level sensors, and analytical sensors for water quality measurement and data loggers with Wi-Fi connectivity.

The development is being speculated as a significant move towards industry academic collaboration. Chief Operating Officer of E+H, Mr. Kailash Desai said, "This is first of its kind of laboratory in the region". Here, the Engineering students will get to practice the application of what they are being taught in the classroom. Students get trained through exploration driven learning in early stages of their career. The training lab is accompanied by video tutorial on how different technology works on application along with their finer points". The exposure to actual devices and mechanism help enhance the employability skills of the engineering students and will equip the students with knowledge of the latest technology before they set out for the work.

SGGS institute BoM Chairman, Mr. Sunil Raithatha, BoM members Mr. Milind Pohnerkar, Mr. Trilok Singh Jabinda and institue Director Dr. L. M. Waghmare and COO of E+H, Mr. Kailash Desai along with E&H team members were inaugurated the laboratory during the Alumni Meet ceremony on 23rd December, 2017.

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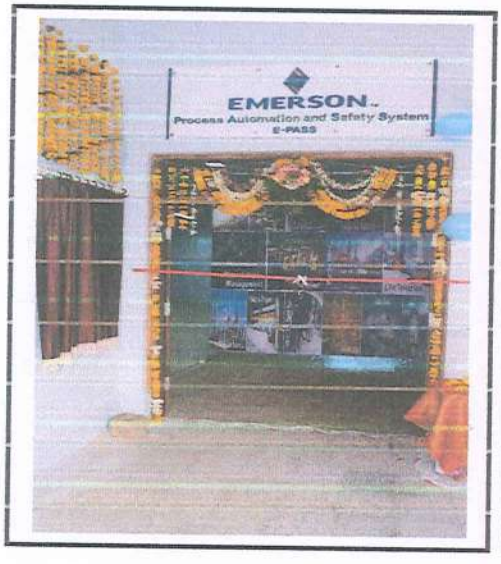
Emerson Process Automation and Safety System (E-PASS)

Emerson Automation Solutions Pvt, Ltd., Mumbai has established Emerson-Process Automation and Safety System (E-PASS) laboratory at our Department. This lab was inaugurated on 24th December, 2016 at the hands of Hon. BoM Chairman, Mr. Sunilji Raithatha, BoM members Mr. Milind Pohnerkar, Mr. Trilok Singh Jabinda, Institue Director Dr. L. M. Waghmare, Group Director HR, Mr. Aniruddha Khekale and Director Marketing Mr. Suhas Bhide. The laboratory consists of following instruments worth INR 40 Lacs which includes,

1. Delta-V System hardware
2. Delta-V System RIO Hardware and Software

Memorandum of Understanding (MoU) has been signed with Emerson Automation Solutions Pvt. Ltd which includes,

1. Training/lectures by experts from Emerson at SGGS
2. Internship for projects
3. Industrial visits of students and faculty
4. Campus recruitment



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Solar Thermal Laboratory

Coordinator: Dr. V. B. Tungikar

Use of Solar Energy for Turmeric Processing

Introduction: Compound Parabolic Concentrator (CPC) systems are developed for the application of turmeric processing. CPC is placed with its receiver pipe along E–W, requiring tilt an adjustment along N–S. Steam is generated using Compound Parabolic Collector (CPC) solar panels. 50 Kg turmeric can be processed in just 15 minutes.

System Working: A schematic layout of the system is shown in Figure. Steam is generated by CPC System. For separation of generated steam and hot water, steam water separator is used by which steam is supplied to the blancher. Steam is supplied through steam valve of blancher. The blancher has hexagonal shape for uniform distribution of steam. After completion of blanching process, extraction of some useful constituents takes place.

Parameter Summary:

Outer Diameter of Absorber Pipe = 50mm

Outer Diameter of Glass Tube = 70 mm

Total time required per batch for turmeric processing (50 Kg.) = 15 Min

Total area covered for solar radiation = 96 m^2

Temperature required for the blanching process = 110° C

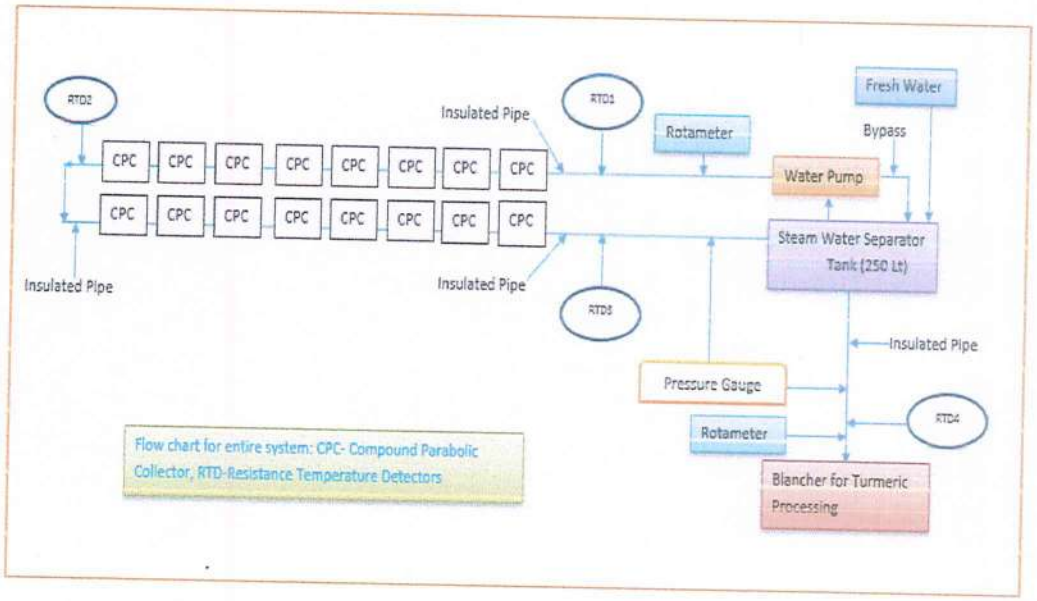
Pressure required for the blanching process = 1.2 bar

Benefits:

- Helpful for farmers in India.
- No fossil fuel is used.
- Less wastage as compared to the traditional process.
- Quality of the rhizomes in turmeric is improved by use of this solar system than conventional methods.

Funding:

Fund of Rs 1250000 have been received from ICT, Mumbai in 2014 under INN-TEQIP project



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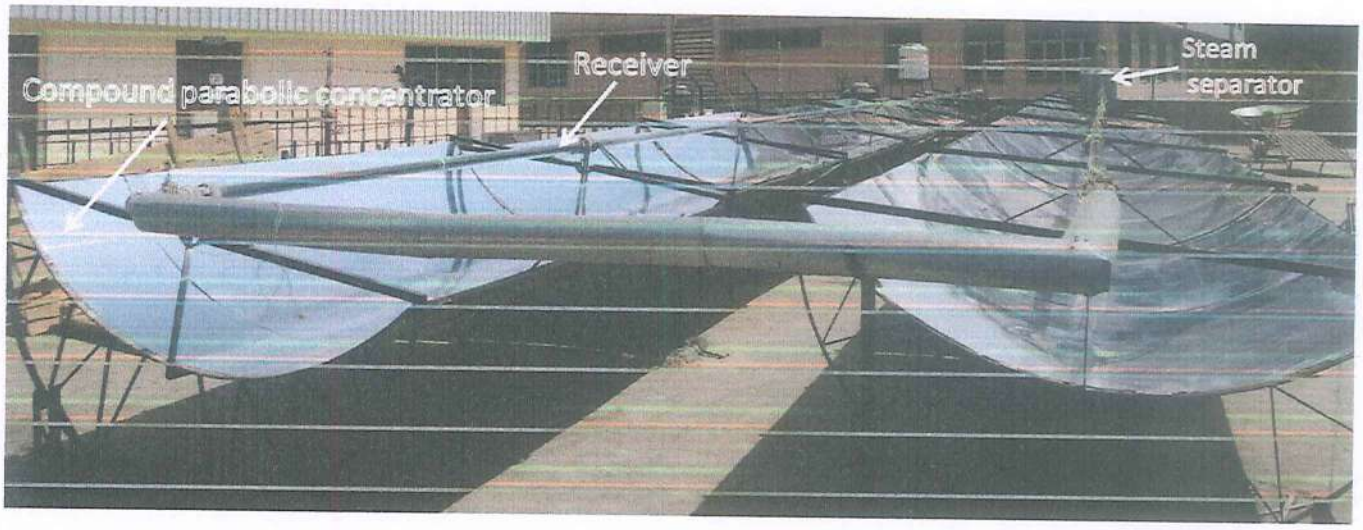

CPC Solar System

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Solar Thermal Laboratory

Coordinator: Dr. V. B. Tungikar

Solar energy based water recovery and effluent evaporation system

Introduction: Scheffler Steam system consisted of 16 m^2 Scheffler concentrator facing south, also referred as standing dish. Solar radiation is concentrated within 400 mm diameter of receiver delivering concentration ratio in the range of 100. The receiver is connected to a water-steam storage tank with inlet and outlet connections. All piping and storage systems are insulated with rockwool insulation of 70 mm thick. System is provided with safety features like pressure relief valve, fusible plug etc.

System Working: First two stages were designed with temperature drop of 25 degree centigrade and last stage with 15 degree centigrade. The system is designed with storage for condensate which can be collected in a distillate tank. Multistage evaporators coupled with Scheffler solar concentrators can be effective system for generation of distilled water

Parameter Summary:

Scheffler concentrator surface area = 16 m^2

Receiver diameter = 50 mm

Receiver volumetric capacity = 18 ltr.

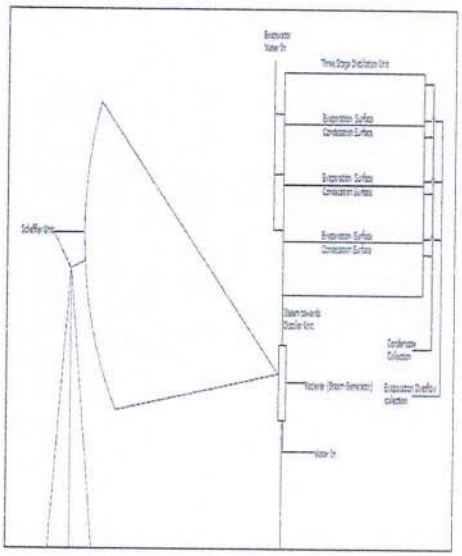
Steam separator volumetric capacity = 28 ltr.

Applications:

This system has potential in areas of salt concentration systems, thickening of salt fruit juices, jams, pulps, sauces and similar applications where water is evaporated on large scale. Evaporating water for thickening of effluent of industries is other promising area.

Funding:

Fund of Rs 507000 have been received from ICT, Mumbai in 2017 under INN-TEQIP project



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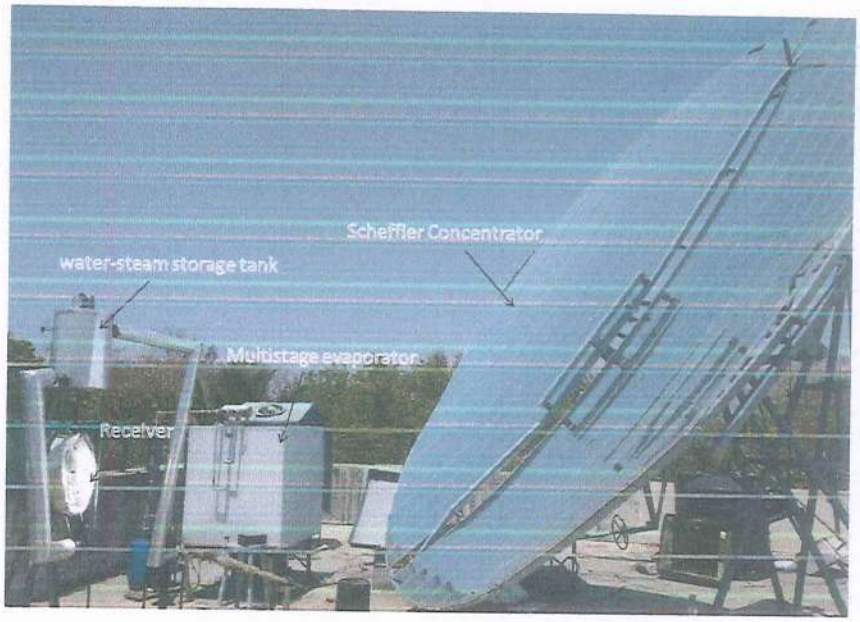

SCHEFFLER Solar System

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"Pragya" – A Best Practice: Summary of last five years

Sr. No.	Year/Theme	Duration	Events held	Faculty Coordinator	Student Coordinator	Distinguished Guests	Sponsorer
1	**Pragya 2014-** ***Technospire awaken the green Gineer within you***	7th to 9th March, 2014	❖ Art Attack ❖ I am an Enginer ❖ ConstroMatEx ❖ Angry Birds ❖ NFS MW ❖ Speedster, Robowar ❖ Line Follower ❖ RoboSoccer ❖ Junior Scientist ❖ Panaromic Pragyaa ❖ Junkyard Warz ❖ Technosolution ❖ Cadwar ❖ Cenfest Tower ❖ E-Quiz ❖ Paper Presentation ❖ Conflinux ❖ Microcon ❖ Hover stream ❖ C-Brain ❖ Q-zen ❖ Techno Tex ❖ Dossiers Manifest ❖ Brahmand & many more	Prof. P. Pramanik	Santosh Sahu	Mr. Vishwas Nagare Patil, Achut Godbole	➢ Kalyani Driving Innovation ➢ Bosch Nashik ➢ Wegilant ➢ Prolific ➢ IQB Technologies ➢ Gurudwara Langar Sahib ➢ SBI Nanded ➢ Lokmat ➢ Nanded Varta ➢ Central Bank of India ➢ Mahindra Mumbai ➢ Diksha Academy Nanded ➢ Aakar Publicity ➢ GVC Electronics ➢ Maharashtra Gramin Bank
2	**Pragya 2015-** ***Youthimism thinking beyond horizon***	13th to 15th March, 2015	❖ E-Quiz ❖ Speedster ❖ Robowar ❖ Line Follower ❖ RoboSoccer ❖ Junior Scientist ❖ Art Attack ❖ Panaromic Pragyaa ❖ Junkyard Warz ❖ Technosolution, Cadwar	Prof. S. B. Dethe	Mrunal M. Surve	Mr. U. G. Zalte, Mr. Avinash Dharmadhikari	➢ Jairam Motors Nanded ➢ Gurudwara Langar Sahib ➢ SBI Nanded ➢ Ebay ➢ Central Bank of India ➢ Mahindra Mumbai ➢ Diksha Academy Nanded ➢ Aakar Publicity ➢ GVC Electronics Nanded ➢ Maharashtra Gramin Bank

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			❖ Cenfest Tower ❖ Paper Presentation ❖ Conflinux ❖ Microcon ❖ Hover stream ❖ C-Brain ❖ Q-zen ❖ Techno Tex ❖ Dossiers Manifest ❖ Brahmand & many more				➢ Excel Academy ➢ Line ➢ Fiat
3	**Pragya 2016-** ***Transcendence***	27th to 28th Feb, 2016	❖ E-Quiz ❖ Speedster ❖ Robowar ❖ Line Follower ❖ RoboSoccer ❖ Junior Scientist ❖ Art Attack ❖ Panaromic Pragyaa ❖ Junkyard Warz ❖ Technosolution ❖ Cadwar ❖ Cenfest Tower ❖ Paper Presentation ❖ Conflinux ❖ Microcon ❖ Hover stream ❖ C-Brain ❖ Q-zen ❖ Techno Tex ❖ Dossiers Manifest ❖ Brahmand & many more	Dr. M. V. Vaidya	Mr. Ankush Deulkar	Mr. Shripad Pandit, Mr. Suyog Bandekar	➢ Olivia feel beautiful ➢ Gurudwara Langar Sahib ➢ SBI Nanded ➢ Ebay ➢ Central Bank of India ➢ Mahindra Mumbai ➢ Diksha Academy ➢ Aakar Publicity ➢ GVC Electronics ➢ Bank of Maharashtra ➢ Karnataka Bank Ltd. ➢ Excel Academy ➢ Punjab National Bank ➢ Alahabad Bank & many more
4	**Pragya 2017-** ***Aagneia Igniting future entrepreneur***	3rd to 5th March, 2017	❖ Techtoon ❖ Codenza ❖ E-Quiz ❖ Speedster ❖ Robowar ❖ Line Follower ❖ RoboSoccer ❖ Junior Scientist ❖ Art Attack ❖ Panaromic Pragyaa ❖ Junkyard Warz ❖ Technosolution ❖ Cadwar	Ms. S. S. Kandhare	Hardik Patil	Mr. Milind Mahajan	➢ TATA Consultancy Services ➢ Gurudwara Langar Sahib ➢ SBI Nanded ➢ Persistent ➢ Hella ➢ Central Bank of India ➢ GVC Developers ➢ Dena Bank ➢ Domino's Pizza

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			❖ Cenfest Tower ❖ Paper Presentation ❖ Conflinux ❖ Microcon ❖ Hover stream ❖ C-Brain ❖ Q-zen ❖ Techno Tex ❖ Dossiers Manifest ❖ Brahmand & many more				➢ Airtel ➢ Mahindra Mumbai ➢ Bank of Maharashtra ➢ Karnataka Bank Ltd. ➢ Punjab National Bank ➢ Allahabad Bank
5	**Pragya 2018-** ***Spevanza reaching out the inner you***	16th to 18th March, 2018	❖ Astroquiz ❖ Fundamental Theory ❖ Codenza ❖ Innovative Product Development ❖ Junkyard wars ❖ E-Quiz ❖ Speedster ❖ Robowar ❖ Line Follower ❖ RoboSoccer ❖ Junior Scientist ❖ Art Attack ❖ Panaromic Pragyaa ❖ Junkyard Warz ❖ Technosolution ❖ Cadwar ❖ Cenfest Tower ❖ Paper Presentation ❖ Conflinux ❖ Microcon ❖ Hover stream ❖ C-Brain ❖ Q-zen ❖ Techno Tex ❖ Dossiers Manifest ❖ Brahmand & many more	Dr. A. K. Manjaramkar	Gaurav Rotke		➢ Gurudwara Langar Sahib ➢ Hotel Atithi Nanded ➢ TCS Pune ➢ Vinodrai Industries Jalna ➢ Klassic Men's Wear ➢ SBI Nanded ➢ Persistent Pune ➢ Central Bank of India ➢ GVC Developers Nanded ➢ Dena Bank ➢ Domino's Pizza ➢ Airtel ➢ Mahindra Mumbai ➢ Bank of Maharashtra ➢ Karnataka Bank Ltd. ➢ Punjab National Bank ➢ Allahabad Bank

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