

BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY)
COLLEGE OF ENGINEERING, PUNE 411043



RESEARCH PROJECT ABSTRACTS

ACADEMIC YEAR: 2017-18

Department of Chemical Engineering

1.	Title	Charged graphite nanoplateletes anchored ultrafiltration membranes for separation of heavy metals
2.	Funding/ Sponsoring Agency	DST Nanomission
3.	Amount	Rs. 33,72,000/-
4.	Coordinator	Dr. YogeshChendake
5.	Co Coordinator.	Dr. SachinChavan
6.	Abstract	<p>Formation of PSF based UF membranes possessing graphite nanoparticles and modified with PEG as porogen material for heavy metal rejection. These graphite nanoparticles give freedom for proper distribution of additive particles in the membranes. Additionally these graphite particles can be charged and charge can optimized in both acidic and basic domain with the treatment with acidic and basic solutions. This would be beneficial to achieve the desired rejection properties for heavy metal ions. On the other hand PEG would act as porogenic agent. It would help to enhance the porosity while maintaining the rejection properties. The concentration of PSF in dope solution was varied 23-43% (w/v), while concentration of PEG was optimized in the range of 0-10 % (w/w) of PSF content. An increase in PSF concentration in dope solution leads to highly viscous solution with lower solvent content. This leads to removal of lower amount of solvent from solution upon gelation, thus forming dense surface layer with lower pore size. This results in high selectivity and rejection of heavy metals. The rejection was further enhanced by use of graphite nanoparticles. These particles in the form of graphine oxide (GO) acts as the material with similar charged. The charge leads to enhancement in rejection of heavy metal particles by Donnan exclusion principal. Thus higher rejection (> 94 % for Mn ions) could be achieved. Addition of PEG as porogenic additive was investigated and optimized using various molecular weight PEG. The six PEG's (PEG 20000, PEG 9000, PEG 6000, PEG 1500, PEG 600, PEG 400 and PEG 200) with a molecular weight of 20000, 9000, 6000, 1500, 600, 400 and 200 Da respectively, was used in the analysis. The investigations showed an increase in porosity while maintaining constant pore size. This increase in pore size leads to higher transport properties while the retention and</p>

		selectivity properties are maintained. This was further supported by bubble point and transport analysis. The bubble point pressure was increased from 0.2 to 5.6 bar with increase in dope solution concentration from 23 to 43 % (w/v). The pore size calculations showed a decrease in pore radius from 1404 to 50 nm with an increase in dope solution concentration. An alternative additive in the form of small molecular weight metal oxide was tried to improve surface and rejection properties. The ZnO or GO nanoparticles were tried with and without an acid treatment. Acid treatment was done by using 0.1 N solution of either Acetic acid, HCl, HNO ₃ or H ₂ SO ₄ for 24 hr. These materials showed an improved rejection properties for both Mn and Cr ions in neutral conditions.			
7.	Month and Year of Commencement	02 nd May 2018			
8.	Month and Year of Completion	Two year duration			
9.	Amount received	Rs. 24,51,000/-			
10.	Amount spent till date	<i>Sr No</i>	Sanctioned Heads	Funds Allocated (indicate sanctioned or revised)	Expenditure Incurred (1st April to 31st March)
		1.	Manpower costs	2,16,000.00	1,73,400.00
		2.	Consumables	5,50,000.00	5,50,000.00
		3.	Travel	50,000.00	-
		4.	Contingencies	2,10,000.00	88,641.00
		5.	Others, if any	2,00,000.00	89,378.00
		6.	Equipment	11,00,000.00	10,96,453.00
		7.	Overhead expenses	1,25,000.00	1,25,000.00
		Total		24,51,000.00	21,22,872.00
11.	Present Status	Ongoing			

12.	Outcomes of research	<p>(A) Papers published only in cited Journals (SCI)</p> <p>03 publications are in writing process, they are kept on the hold as results are being analyzed for possible patent applications as mentioned below. The patent specifications are being assessed for possible patent filing by institute.</p> <p>(B) Papers published in Conference Proceedings, Popular Journals etc.</p> <ol style="list-style-type: none"> i. SupriyaDhume, RishikaJakhanwal, AtharvaBaxi, Abhishek Patel, YogeshChendake, Membrane modification for efficient recovery of milk components from dairy effluent, NANOCON 2018, BVDU COE Pune, India. ii. PallaviMahajan-Tatpate, SupriyaDhume, YogeshChendake, Use of ultrafiltration membranes for heavy metal separation: a review, International conference on Energy and Environment, ICEE 2019, VIT Pune, India. <p>Patents filed/ to be filed:</p> <p>Patent is in assessment stage with the title of, “Process for formation of charged particle containing polysulphone (PSF) based membranes for heavy metal separation”</p>
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ACADEMIC YEAR 2016-17**Department of Chemical Engineering**

1.	Title	Photocatalytic and Sono-photocatalytic Degradation of Organic Pollutants under Visible Light
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	Rs.2,98,500/-
4.	Coordinator	Dr. Mrs. Sunita. M. Jadhav
5.	Abstract	<p>Semiconductor photocatalysis is a fast-emerging advanced oxidation process for organic pollution abatement. Titanium dioxide (TiO₂) has dominated research in various photocatalytic applications. However, its inherent wide band gap and high recombination rate of the photogenerated charge carriers have been lingering obstacles hindering the large scale, practical exploitation of this material. Hence, research work in focused on TiO₂/other semiconductor semiconductors band gap engineering to improve charge separation and extend its response into the visible light region.</p> <p>Cavitation Technology is also an emerging AOP for treating contaminated water. The chemical effects of ultrasound are due to the phenomenon of cavitation which is the nucleation, growth and collapse of bubbles in a liquid. Heterogeneous reactions on surfaces of catalyst are appearing to be favorably enhanced in the reactive environment produced by cavitation. The combination of ultrasound technology and photocatalysis leads to the process intensification, which can make cavitation a suitable technology for degradation of wastewater streams. Also, it can be used for lowering the toxicity levels of the effluent stream so that conventional biological oxidation can be readily applicable. Hence, sono-photocatalytic degradation of organic pollutants have been proposed for intensification of AOPs.</p>
6.	Month and Year of Commencement	10 Jan 2017
7.	Month and Year of Completion	-
8.	Amount received	Rs.2,98,500/-
9.	Amount spent till date	Purchase orders have been placed
10.	Present Status	Ongoing
11.	Outcome of research project	--

Department of Chemical Engineering

1.	Title	Studies in wastewater treatment with reference to advanced oxidation processes
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	Rs. 2.98 Lacs.
4.	Coordinator	Dr. Salim J. Attar
5.	Co-Coordinator.	Mr. Prasad B. Patil
6.	Abstract	<p>The wastewater treatment with reference to Advanced Oxidation Processes (AOPs) includes cavitation (acoustic and hydrodynamic cavitation), photocatalytic oxidation, ozonation, use of hydrogen peroxide, Fenton's chemistry and these processes have the potential to degrade the new toxic chemicals, bio-refractory compounds, pesticides etc. either partially or fully, but most importantly under ambient conditions. Advanced oxidation processes are defined as the processes that generate hydroxyl radicals in sufficient quantities to be able to oxidize majority of the complex chemicals present in the effluent water. Hydroxyl radicals are powerful oxidizing reagents with an oxidation potential of 2.33 V and exhibits faster rates of oxidation reactions as compared to that using conventional oxidants like hydrogen peroxide or KMnO₄.</p> <p>The present study in general includes cavitation based techniques and the effect of different parameters such as pH, pollutant concentration, addition of supporting oxidizing chemical H₂O₂, additives / catalyst loading, fenton's process, advanced fenton process etc on percent degradation of pesticide pollutant.</p>
7.	Month and Year of Commencement	July 2017.
8.	Month and Year of Completion	July 2019
9.	Amount received	Rs. 2.98 Lac.
10.	Amount spent till date	NIL
11.	Present Status	Ongoing: – The purchase order has been raised for hydrodynamic cavitation setup with detail diagram and specifications.
12.	Outcomes of research	Cavitation techniques being successfully used in water treatment, water sanitation, vegetable oil refining, renewable fuels, petroleum, pesticide, food and beverages, dyes

		<p>intermediates and chemical industries, where there is a need to solve environmental problems, reducing operating cost and improve profitability. There are certain organic pollutants, especially in pesticide/dye/pigment/textile wastewaters (considered refractory compounds) which are difficult to remove/degrade by using conventional methods of chemical/biological treatment. For such pollutants, cavitation technique could be successfully used.</p>
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Department of Chemical Engineering

1.	Title	Biobutanol: Valorization of agricultural waste to biofuel
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	Rs. 2.99 Lacs
4.	Coordinator	Dr. Prakash V. Chavan
5.	Co- Coordinator.	Dr. Sandip B. Bankar
6.	Abstract	<p>As far as biobutanol production is considered, till date maximum research has been put forth by United States or European countries with their origin and requirements while very few studies are available in Indian context and thus extensive efforts have been made so far and would be continued further to reach the heights of commercialization in Indian view point. Hence, the present study was undertaken to produce efficient and economic biobutanol from lignocellulosic biomass. The biomass obtained from various Indian segments such as sugar industry waste, agriculture, fruit and vegetable industry are having huge potential to use as feedstocks. Their physicochemical properties, availability and low cost make them highly competitive substrates of second generation biobutanol production and facilitate reduction in environmental pollution. The potential substrates such as molasses, press mud, pineapple peel waste, cauliflower waste, and peas pod waste were explored for biobutanol production. However, the different step such as drying, pretreatment and detoxification were employed along with fermentation to efficiently produced biobutanol from aforesaid substrate. Among them, molasses showed 50% total sugar and used as direct substrate for fermentation. The maximum ABE titer obtained was 7.23 g/L with 55.6% substrate consumption. Moreover, it is worth mentioning that all selected feedstocks proved their feasibility in regard of butanol production at batch scale and further improvements in final solvent titer are underway. Additionally, modification in separation technology will be studied for efficient recovery of solvents and by products. To the economical point of view, biobutanol has enormous potential as a renewable energy source and can be used as future fuel to reduce the nation dependency and to prevent the environmental concern.</p>
7.	Month and Year of	February 2017

	Commencement	
8.	Month and Year of Completion	February 2018
9.	Amount received	Rs. 2.99 Lacs
10.	Amount spent till date	The POs for equipment/instruments have been given to respective vendors. The installation is expected before October 2017 end. At the moment, amount spent is NIL
11.	Present Status	The POs for equipment/instruments have been given to respective vendors.
12.	Outcomes of research	--

Department of Civil Engineering

1.	Title	Study of Flow around bridge piers
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	Rs. 2,97,000/-
4.	Coordinator	Dr. VidulaSohoni
5.	Co Coordinator.	--
6.	Abstract	<p>Alluvial streams are sometimes partially obstructed by hydraulic structures such as spurs, bridge piers , abutments, guide banks etc. In some other cases high velocity sheets of water from spillways and sluice gates flow over loose alluvial material. In all these cases the bed level in the vicinity of the structures is lowered as a result of interaction between the high velocity flow and the loose bed and consequent modification in the flow pattern, such local drop in the bed level is known as local scour.The knowledge of the maximum depth of scour around such structures is essential from the point of view of safety of these structures; excessive scour can undermine the foundations and lead to the failure of the structure. Proper design requires that the foundation be taken down to a level lower than the anticipated level of the scour hole.</p> <p>The process of scour around bridge elements like piers, abutments and spur dikes is complex due to three-dimensionality of the flow and sediment transport. A number of investigations have been carried out on this topic mainly with the objective of developing relationships for maximum depth of scour. As a result, large amount of literature is available on the subject of bridge scour and its control. However, only a few studies are available so far on the flow field around the bridge elements.</p> <p>All the above studies are carried out with uniform sediments.Thus there is urgent need to investigate effect of sediment non uniformity on scour in compound bridge piers.</p> <p>The present project aims to carry out experimental investigations to decide the elevation of top surface of well of circular compound pier below general bed level for minimum scour condition,to study the scouring effect around circular compound pier for non uniform sediments under clear water conditions and to study the scaling effect of pier to foundation width ratio on scouring.Experimental studies that will be conducted at Hydraulics laboratory of</p>

		BharatiVidyapeethDeemed University college of Engineering Pune , in a tilting flume sizing 20 m long , 0.7 m wide and 1 m deep with maximum discharge as available is 100 lps.Experiments will be conducted for clear water scour condition using non uniform sediments.Scaled models of pier and foundation of different dimensional ratios will be fabricated and tested under the controlled environment using perspex material only.
7.	Month and Year of Commencement	10/01/2017
8.	Month and Year of Completion	10/01/2019
9.	Amount received	Rs. 2,97,000/-
10.	Amount spent till date	Nil
11.	Present Status	<p>Quotations were invited from the vendors for the purchase of "Ultrasonic Flow Meter" (as per the proposal submitted to Teqip) . Based on the comparative statement , a meeting of Purchase committee was held on 24/03/2017.</p> <p>Suggestions were given by Principal and Chairman of the Purchase committee -Dr. AnandBhalerao regarding purchase of another equipment " Bed Level Profiler" instead of "Ultrasonic Flow Meter" as it is more useful. Accordingly presently the quotations for the same are invited.Since the equipment is not readily available, it needs to be fabricated. I am now looking for the vendors doing this work . This is the status.</p>
12.	Outcomes of research	<ol style="list-style-type: none"> 1.To arrive at the elevation of top surface of well of circular compound pier below general bed level for minimum scour condition. 2.To understand the scouring effect around circular compound pier for non uniform sediments under clear water conditions. 3.To study the scaling effect of pier to foundation width ratio on scouring

Department of Civil Engineering

1.	Title	Performance evaluation of Ocimum sanctum (Tulasi) and AzadiractaIndica (Neem) as water disinfectant
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	Rs.296500/-
4.	Coordinator	Dr. Milind R. Gidde
5.	Abstract	<p>There are number of effective disinfectants that have been identified of plant origin. In many rural communities of developing countries water disinfection by chemicals such as chlorine is impractical. Therefore, disinfectants of natural/plant origin play an important role in water disinfection. Large number of plant materials has been used over the years. Indigenous knowledge indicates that there are several plant species that can be used as disinfectants.</p> <p>The present research work consists of studying the effectiveness of aqueous and alcoholic extract of Ocimumsanctum(Tulasi) and Azadiractaindica (Neem) for disinfection of water. Also the performance efficiency of both aqueous and alcoholic extracts will be compared. The phytochemical screening to know the presence of effective elements in the extracts also will be performed.</p>
6.	Month and Year of Commencement	10 Jan 2017
7.	Month and Year of Completion	10 Jan 2019
8.	Amount received	Rs. 296500/-
9.	Amount spent till date	Nil
10.	Present Status	Ongoing
11.	Outcomes of research	--

Department of Electrical Engineering

1.	Title	Design and development of dual stator Induction motor
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	2,98,800/-
4.	Coordinator	Anagha Rahul Soman
5.	Co-Coordinator.	Dr.D.G.Bharadwaj
6.	Abstract	<p>The inquisitive engineering mind always thinks about the enhancement in the existing performance of these machines to make them more useful in conventional and modern applications. One such thought process has given birth to the development of dual stator winding squirrel cage Induction machine. A model of 3 phase , dual stator winding Induction motor is to be tested for Performance of motor using the windings separately for No Load Test and Blocked Rotor Test, Resistance measurement Test, Performance evaluation using Circle Diagram, Performance evaluation through Practical Tests, Comparison of both, Effect of exciting both the windings with variable voltage and variable frequency, Controller design to suit the machine so that both the windings can be made to operate at variable voltage-variable frequency source. Practical results are to be validitated by loading the machine preferably coupling it to a suitable generator or using eddy current torque meter. Simulation of machine and prediction of analytical and practical results. Comparison of theoretical and practical results. Possibility of using the machine as generator by optimizing the capacitor value will be checked and Harmonics in all the cases will be measured.</p>
7.	Month and Year of Commencement	Jan 2017
8.	Month and Year of Completion	--
9.	Amount received	2,08,800/-
10.	Amount spent till date	---
11.	Present Status	Ongoing
12.	Outcomes of research	The research work aims to contribute in designing and development of an Induction motor for improving the

		<p>performance of induction motor at reduced cost., to improve efficiency & power factor but still be cost effective, Better utilization of magnetic material, Speed sensor less operation, Better reliability, Full utilization of stator windings at all times to produce useful torque, Fast dynamic response, to propose new design of Induction machine that will give not only smooth speed variation in a bigger range but also the requisite speed torque characteristics can be obtained easily.</p>
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Department of Electrical Engineering

1.	Title	Study of suitability of different generators and its power quality analysis for wind power applications.
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	Rs. 2,97,500/-
4.	Coordinator	Prof. Dr. Deepak Bankar
5.	Co-Coordinator.	--
6.	Abstract	<p>There are various generators which can find its applications to wind energy conversion systems. Squirrel cage Induction generators and synchronous generators are widely used for such applications. These generators have already proven their compatibility for variable speed wind turbines however there are still few limitations on its use due to power quality problem and their low voltage ride through capability. Lot of research has been carried out on these technologies. Now days few other generators are also under study to prove themselves as an alternative to existing technology.</p> <p>This experimentation setup will analyze the suitability of various generators and its power quality analysis when connected to grid as well as when operating as stand alone. The research mainly focuses on operation of self excited induction generator, and Synchronous generator.</p>
7.	Month and Year of Commencement	January 2017
8.	Month and Year of Completion	May 2017
9.	Amount received	Rs. 2,97,500/-
10.	Amount spent till date	Rs. 2,97,500/-
11.	Present Status	Completed
12.	Outcomes of research	<ul style="list-style-type: none">• Prototype model representing the variable speed wind turbine generator along with its control.• Performance of SEIG under variable speed conditions.• Performance of SMG under variable speed conditions.• It is possible to conduct more than 15 experiments using this hardware setup for UG & PG courses.

Department of Electrical Engineering

1.	Title	Development of Ultracapacitor based Electric Vehicle System
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	2.99 Lakhs
4.	Coordinator	Prof R M Holmukhe
5.	Co-Coordinator.	Dr. P B Karandikar and Mr. V L Kokate
6.	Abstract	Ultra Capacitor is new technology to India as compared to developed countries. Ultra capacitor is a pulse current device and it can be used in almost all automobiles which are operating on conventional energy source. By use of Ultra capacitor, one can achieve better co-ordination between battery, ultra capacitor and electric motor or any other load in system at various drive cycle conditions such as acceleration, retardation, braking, constant speed or any other odd condition. Ultra capacitor (UC) technology is emerging technology. It is the technology in which very few scientists are working around the globe. Only handfuls of institutes in United States, Germany, and Australia are taking initiative in this area. Ultra capacitor is commercially available only in the market of United States and Europe. Maxwell, EVANS capacitor, EPCOS are the only few companies in the word who have commercially made this product available. The development and use of this device is a major challenge and it will be addressed in this research work.
7.	Month and Year of Commencement	April 2017
8.	Month and Year of Completion	March 2019
9.	Amount received	2.99 Lakhs
10.	Amount spent till date	2.99 Lakhs
11.	Present Status	Project is in progress
12.	Outcomes of research	Demo of application of Ultracapacitor based in vehicle system

Department of Mechanical Engineering

1.	Title	Fabrication of dye sensitized solar cell using TiO ₂ nanofibers
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	3,00,000/-
4.	Coordinator	Dr. S. S Chavan
5.	Abstract	<p>A dye-sensitized solar cell (DSSC, DSC or DYSC) is a low-cost solar cell belonging to the group of thin film solar cells. In quantum efficiency terms, Dye Synthesized Solar Cell (DSSC's) are extremely efficient. Due to their "depth" in the nanostructure there is a very high chance that a photon will be absorbed, and the dyes are very effective at converting them to electrons. Most of the small losses that do exist in DSSC's are due to conduction losses in the TiO₂ and the clear electrode, or optical losses in the front electrode. The overall quantum efficiency for green light is about 90%, with the "lost" 10% being largely accounted for by the optical losses in top electrode. The quantum efficiency of traditional designs varies, depending on their thickness, but are about the same as the DSSC.</p> <p>DSSCs are currently the most efficient third-generation (2005 Basic Research Solar Energy Utilization 16) solar technology available. Other thin-film technologies are typically between 5% and 13%, and traditional low-cost commercial silicon panels operate between 14% and 17%. This makes DSSCs attractive as a replacement for existing technologies in "low density" applications like rooftop solar collectors, where the mechanical robustness and light weight of the glass-less collector is a major advantage. They may not be as attractive for large-scale deployments where higher-cost higher-efficiency cells are more viable, but even small increases in the DSSC conversion efficiency might make them suitable for some of these roles as well.</p>
6.	Month and Year of Commencement	20/02/2017
7.	Month and Year of Completion	20/02/2018
8.	Amount received	3,00000/-
9.	Amount spent till date	NIL
10.	Present Status	In Process
11.	Outcomes of research	--

ACADEMIC YEAR 2015-16

Department of Computer Engineering

1.	Title	Design software Testing laboratory using Functional Point Analysis and Test Point Analysis (SRGM) for reduces the Maintenance cost.
2.	Funding/ Sponsoring Agency	BharatiVidyapeeth(Deemed to be)University, Pune
3.	Amount	40,000/-
4.	Coordinator	Mr. Amol K. Kadam
5.	Co-Coordinator.	Mr. SamadhanKadam
6.	Abstract	Software cost estimation is the important activity while the development of the software. Expenditure assessment is bit complex task as it can be affected by many factors. This factor aids in the calculating of maintenance cost of software. In this paper we have implemented the function point analysis and test point analysis in order to discover the maintenance cost. This is accomplished by using the various techniques to calculate the function point analysis and test point analysis. Along with the calculation of maintenance cost we have also presented the module to assess the reliability of the software from the context of white box testing. Software reliability growth models are aids to evaluate the reliability of the software. This paper presented the NHPP based SRGM to estimate the reliability.
7.	Month and Year of Commencement	20/05/2015
8.	Month and Year of Completion	01/03/2016
9.	Amount received	40,000/-
10.	Amount spent till date	40,000/-
11.	Present Status	Completed

Department of Computer Engineering

1.	Title	“Utilizing Video compression and decompression algorithm on video rendering during upload and download time using J2ME RMI”.
2.	Funding/ Sponsoring Agency	BharatiVidyapeeth(Deemed to be)University, Pune
3.	Amount	Rs. 33,000/-
4.	Coordinator	NaveenkumarJayakumar
5.	Co-Coordinator.	--
6.	Abstract	<p>User can access all resources continuously and consistently on heterogeneous devices using J2ME and RPC video rendering. However, resource constrained on mobile devices is more challenging to use complex resources or applications such as laptops, PDA, mobile devices etc. There are various approaches have been proposed to solve this problem such as system base or resource-based applications. However, degrading fidelity application often required in existing solutions.</p> <p>User knows that the problem of resource access can be overcome by dynamically offloading part of the execution of resource and partitioning of resource to a nearby powerful surrogate. This process will enable delivery of Runtime data extractor system to be required without rewriting of expensive resources and significant fidelity of degradation. Because the file system environments of runtime extractor are more powerful runtime offloading system needs to adapt both functions of resource and patterns of resource execution.</p> <p>Performing video rendering using runtime computing, for that we are using model of Fuzzy control. For offloading developed an interface engine to adaptively solve decision making problem of two key while performing runtime offloading i) resource partitioning policy for intelligent selection ii) adaptive offloading for timely trigger evaluation of extensive trace shows the effectiveness of an interface offloading engine.</p> <p>Executor executes the user requested data. Also executor Extract Model, View and Control part from Video file. At the moment of sending file to requested client executor send model and view part of the video file.</p> <p>Runtime compression using Huffman algorithm gives more confidential data at runtime sending data from one machine to another machine. Huffman algorithm is easy to use, implement and understand with that algorithm gives data confidentiality using runtime encryption of data.</p>

7.	Month and Year of Commencement	June 2015
8.	Month and Year of Completion	June 2016
9.	Amount received	33,000/-
10.	Amount spent till date	33,000/-
11.	Present Status	Complete

Department of Chemical Engineering

1.	Title	Preparation of UF membranes with high flux and low molecular weight cut off for application in dairy industries
2.	Funding/ Sponsoring Agency	Bharati Vidyapeeth (Deemed to be) University, Pune
3.	Amount	32000/-
4.	Coordinator	Dr. Yogesh J. Chendake
5.	Co-Coordinator.	Prof. Rahul K. Kulkarni
6.	Abstract	<p>Phase inversion is one of the most important processes for preparing asymmetric polymer porous membranes such as microfiltration, ultrafiltration (UF), nanofiltration, reverse osmosis and supports for composite membrane. There always a trade off between MWCO and flux through the membranes. If it could be managed properly, these membranes are most suitable for separation applications in dairy and pharmaceutical industries, where the components to be separated are highly susceptible for temperature and contaminations. Membrane have benefits of low temperature separations, without any application of heat or contamination with other components. For this careful optimization of membrane properties is needed. This projects aims towards study of such parameters during formation of UF membranes.</p>
7.	Month and Year of Commencement	June 2015
8.	Month and Year of Completion	Ongoing
9.	Amount received	32000/-
10.	Amount spent till date	32,000/-
11.	Present Status	Complete

Department of Chemical Engineering

1.	Title	Preparation of Ultrafiltration Membranes with precise control on pore morphology and permeation characteristics for water treatment application
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	275000/-
4.	Coordinator	Dr. Yogesh J. Chendake
5.	Co-Coordinator.	
6.	Abstract	Membrane technology is emerging as an able alternative for application in various industrial and water treatment applications. But the membranes have a trade off between MWCO and flux through the membranes. Careful optimization of the membrane preparation conditions can lead to formation of membrane with desired porosity and pore size. A small pore size leads to excellent separation properties, while the transport rate is measurably low. While for higher flow rate we have to compromise on the rejection properties. This project aims towards optimization of membrane properties with precise control on porosity and pore size. Thus formation of high porosity with small pore size membrane can result in high transport rate and excellent rejection properties.
7.	Month and Year of Commencement	March 2016
8.	Month and Year of Completion	Ongoing
9.	Amount received	275000/-
10.	Amount spent till date	2,71,559/-
11.	Present Status	Ongoing

Department of Civil Engineering

1.	Title	Effect of permeability of permeable spur on the velocity and the dampening of velocity.
2.	Funding/ Sponsoring Agency	BharatiVidyapeeth Deemed University
3.	Amount	Rs. 35,000/-
4.	Coordinator	Prof. Mrs. Deepali Rahul Kulkarni
5.	Co-Coordinator.	----
6.	Abstract	<p>In river training work, permeable spur can be a good alternative to the traditional methods. The main principle behind this permeable spur is dampening of velocity. Due to the dampening of velocity, sedimentation is initiated which leads to the anti-erosion to the river bank. In past few years many investigators have worked on the permeable spur but they have carried out the scour study and comparison of scour due to impermeable spur and permeable spur. In this present study, experimentation is to be carried out by using permeable spur models with different permeability (i.e. 90%, 80%, 70%, 60% and 0%) in 20 m long flume. Point velocity is measured using current meter (Velocity meter) at different locations such as upstream of spur, near the spur and downstream of the spur. Pressure distribution at various locations is also to be measured. These permeable spur models will be run for different discharges. Data is collected and will be analyzed.</p>
7.	Month and Year of Commencement	July 2015
8.	Month and Year of Completion	December 2016
9.	Amount received	35,000/-
10.	Amount spent till date	Complete
11.	Present Status	Completed

Department of Electrical Engineering

1.	Title	Application and enhancement of cloud computing technique in electrical grid to improve grid performance.
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	2.70 Lakh
4.	Coordinator	Prof. NachiketKulkarni
5.	Co-Coordinator.	
6.	Abstract	<p>To examine and demonstrate the CC enabled grid model, We hereby propose to setup a laboratory based representative grid with a IED connected in circuit with load. The grid formed by this setup will be then provided with Real Time Monitoring and Control by using Cloud Computing Architecture.</p> <p>An Over-drawl and Under-drawl situation will be created artificially in laboratory setup to demonstrate the Grid disturbance (As that occurred during 30th July 2012).</p> <p>An algorithm based program coding will be done on CLOUD architecture and the intelligent device for “Automatic Grid isolation for over-drawl /under-drawl situation – using CLOUD computing Technique”.</p> <p>The CLOUD will act as a master program, while the intelligent device will act as a slave to perform the isolation operations as desired</p>
7.	Month and Year of Commencement	May, 2016
8.	Month and Year of Completion	June, 2018
9.	Amount received	2.70 Lakh
10.	Amount spent till date	2.59 Lakh
11.	Present Status	Completed

Department of Electrical Engineering

1.	Title	Design and development of dual stator squirrel cage Induction Machine
2.	Funding/ Sponsoring Agency	BharatiVidyapeeth Deemed University
3.	Amount	30,000/-
4.	Coordinator	Mrs. Anagha Rahul Soman
5.	Co-Coordinator.	Prof.D.G.Bharadwaj
6.	Abstract	<p>Three phase Induction machines are employed in almost all the industries for its simple construction & easy operation. More than 85% of Industrial motors in use today are in fact Induction machines. It is predicted that more than 60% of electrical energy generated is being consumed by Induction machines alone. As 90% of the motors used are Induction machines, if the negative qualities of the machine are minimized & operating characteristics if still improved, will lead to a great positive impact on the market & in turn on the society as well.</p> <p>Any attempt to improve efficiency & power factor will be cost effective The researchers have presented new designs emphasizing small size, low weight, low cost, high performance etc. using different direct as well indirect nonlinear optimization techniques. The quest for improvement in design has no end. The work & study relates to the design of a dual stator , single rotor three phase cage induction motors</p>
7.	Month and Year of Commencement	2015
8.	Month and Year of Completion	2016
9.	Amount received	30,000/-
10.	Amount spent till date	30,000/-
11.	Present Status	Completed

Department of Electrical Engineering

1.	Title	Single Phase Ball Milling Machine and its Analysis on Super-capacitor
2.	Funding/ Sponsoring Agency	BharatiVidyapeeth Deemed University, Pune (India)
3.	Amount	37,460/-
4.	Coordinator	Mr. SuyogSubhashHirve
5.	Co-Coordinator.	Mrs. Swati Shirish More
6.	Abstract	<p>Now a days, more emphasis given on energy storage devices mainly which are used to store electrical energy. There are various types of energy storage devices which are available in the market. As the electrical storage capacity increases the related cost with it also increases. A super-capacitor (SC), sometimes ultra-capacitor, formerly electric double-layer capacitor (EDLC)) is a high-capacity electrochemical capacitor with capacitance values up to 10,000 farads at 1.2 volt that bridge the gap between electrolytic capacitors and rechargeable batteries. They typically store 10 to 100 times more energy per unit volume or mass than electrolytic capacitors, can accept and deliver charge much faster than batteries, and tolerate many more charge and discharge cycles than rechargeable batteries. They are however 10 times larger than conventional batteries for a given charge. Super-capacitors are capacitors which are having more charge storage capacity than usual capacitors. The available super-capacitors in the markets are too costly. However the research and development to reduce the cost and increase the storage capacity of ultra-capacitors is going on. This project mainly focuses on the fabricating a super-capacitor which is of low cost and the raw material produced and treated in an indigenously developed, manufactured, fabricated low cost Ball Mill Machine.</p>
7.	Month and Year of Commencement	July 2015
8.	Month and Year of Completion	Dec 2016

9.	Amount received	37,460/-
10.	Amount spent till date	NIL
11.	Present Status	Literature survey and Ball milling machine Data collection in progress

Department of Electronics Engineering

1.	Title	Dual transform based Digital Audio Watermarking Technique
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	2.83 Lakh
4.	Coordinator	Dr. J. S. Chitode
5.	Co-Coordinator.	Mrs. MangalPatil
6.	Abstract	<p>The proposed idea of this research work is to develop the robust watermarking algorithm in transform domain for digital audio signal to improve the robustness & evaluate the performance of this algorithm for different types of signal processing attacks such as filtering, resampling, requantization, Volume scaling, etc. The parameters such as robustness, biterror rate (BER), signal to noise ratio (SNR) & quality of the audio signal are considered here to evaluate the performance of the proposed work.</p> <p>The significance of this research work is to protect intellectual property rights of the digital audio signals. For encoding high quality digital audio signals, transform technique is very useful. Using validation methods, the performance of the proposed algorithm will be evaluated in terms of security, perceptual quality, & robustness for different audio samples.</p>
7.	Month and Year of Commencement	March 2016
8.	Month and Year of Completion	NA
9.	Amount received	2.83 Lakh
10.	Amount spent till date	2.83Lakh
11.	Present Status	Complete

Department of E&TC Engineering

1.	Title	Android based wireless communication
2.	Funding/ Sponsoring Agency	BharatiVidyapeeth Deemed University Pune
3.	Amount	28,699/-
4.	Coordinator	Mr. SudhirAdhikraoKadam.
5.	Co-Coordinator.	Mr. Vinod H. Patil
6.	Abstract	Notice board is a primary thing in any institution/organization or public utility places like bus stations, railway stations and parks. But sticking various notices day-to-day is a difficult process. The Notice board is a common display for effective mode of providing information to the people, but this is not easy for updating the messages instantly. This project deals about an advanced Hi-Tech wireless Notice Board. This system is enhanced to display the latest information through an Android application of smart phones or tablet.
7.	Month and Year of Commencement	20/05/2015
8.	Month and Year of Completion	March 2016
9.	Amount received	28,699/-
10.	Amount spent till date	28,699/-
11.	Present Status	Complete

Department of Mechanical Engineering

1.	Title	An Experimental Investigation on Evaluation of Performance of Four Biomass Cookstoves.
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount Sanctioned	3.00 Lakh
4.	Co-Ordinator	Dr. Kailasnath B. Sutar
5.	Co-Coordinator.	--
6.	Abstract	Currently various kinds of biomass cookstoves available for the users are: traditional cookstoves, improved cookstoves (both metal and mud) and advance cookstoves. The metal cookstoves may or may not be with fans whereas advanced cookstoves may be of gasifier or combustion types. It is proposed to conduct systematic laboratory tests on five types of biomass cookstoves viz. traditional three stone fire, improved mud cookstove, improved natural draft metal cookstove, improved forced draft metal cookstove and forced draft gasifier cookstove. Both thermal as well as emission performance of the cookstoves will be measured. Input power versus efficiency characteristic curves will be developed for each cookstove.
7.	Month and Year of Commencement	April, 2016
8.	Month and Year of Completion	March, 2018
9.	Amount spent till date	3.00 Lakh
10.	Present Status	Completed

Department of Production Engineering

1.	Title	Load distribution in hybrid joints.
2.	Funding/ Sponsoring Agency	Bharati Vidyapeeth University
3.	Amount	Rs.30,000/-
4.	Coordinator	Mr.MaheshJanardanPatil
5.	Abstract	<p>Hybrid joints are a combination of adhesive bonding and mechanical fastening and are known to combine the advantages of both joint types. Mechanical fasteners are commonly used with adhesive joints. The primary purpose for using the mechanical fasteners is to provide redundancy to the adhesive joints because of the uncertainties associated with adhesive only joints. Therefore, the use of a fastener in hybrid joint is mainly a part of fail-safe design. The objective of our project is to enable hybrid joining in automobiles which in result enhances the strength and life of joints. This will be accomplished by evaluating the mechanical behavior of a representative structure consisting of composite material and metal under tensile load. We have used the combination of bolted and adhesive joints in our project and analyze the trend of variation of base metal, bolt geometry and adhesive. The testing/experimentation is done using Universal Testing Machine (U.T.M.). Substituting composite structures for conventional metallic structures has many advantages because of higher specific stiffness, high strength to weight ratio, light weight, tailored properties, high corrosion resistance, high fatigue life & higher specific strength of composite materials.</p> <p>We have considered the properties of both bolted and adhesive joint. And it is believed that the adhesive layer between bolted lap joint results in a two stage failure of the joint. Hence a modified joint is obtained with increased strength. The experimental analysis was conducted using the Design of Experiment (DOE) methodology & the influence of the material, bolt geometry, and adhesive on tensile shear strength was assessed through the analysis of variance (ANOVA).</p>
6.	Month and Year of Commencement	June 2015
7.	Month and Year of Completion	May 2016
8.	Amount spent till date	30,000/-
9.	Present Status	Completed

ACADEMIC YEAR 2014-15**Department of Computer Engineering**

1.	Title	Design software Testing laboratory using Software reliability Growth model with concurrent Software Development Life Cycle
2.	Funding/ Sponsoring Agency	UGC- MRP
3.	Amount	11,85,000/-
4.	Coordinator	Prof. Dr. Shashank D. Joshi
5.	Co Coordinator.	Prof. Amol K. Kadam
6.	Abstract	Software reliability is defined as the probability of free failure operations for a specified period of time in specified conditions. Software reliability growth models (SRGM) have been developed to estimate software reliability measures such as software reliability, number of remaining faults & software failure rate. Software testing is a measure face which takes place during software development process .Testing is used to find errors. Testing includes the activities which focus on evaluating an attribute or capability of the program for system & determining that it meets its required result. Software testing is a critical element software quality & ensures & represents the ultimate review of specification, design & code generation. But testing of the software for long time may not ensure high reliability & bug free software. Optimum amount of code required to be covered to make sure that software may not be removed perfectly; this is mainly due to nature of testing team or complexity of software. This phenomenon is known as imperfect debugging. When the faults are not removed perfectly & leads to further generation of fault this process is known as error generation.
7.	Month and Year of Commencement	December 2014
8.	Month and Year of Completion	December 2016
9.	Amount received	11,85,000/-
10.	Amount spent till date	-
11.	Present Status	40% work is complete

Chemical Engineering Department

1.	Title	Bioprocessing of biofuels
2.	Funding/ Sponsoring Agency	Department of Science and Technology (DST), New Delhi
3.	Amount	19.00 Lakh (for 2014-2015) 16.65 Lakh(for 2015-16) 17.06 Lakh(for 2016-17)
4.	Coordinator	Dr. SandipBalasahebBankar
5.	Abstract	Developing knowledge-based bio economy by collaborating academia and industries to exploit new and emerging research opportunities that address the environmental, social and economic challenges during energy generation. To develop the bio-butanol production process with highly demanding, cheap lignocellulosic feedstock materials for sustainable use and production of other renewable bio-resources with the security of agricultural production in consideration. The demonstration of the process at pilot scale along with the simultaneous recovery and purification of the product will be targeted.
6.	Month and Year of Commencement	July 2014
7.	Month and Year of Completion	June 2017
8.	Amount received	19.00 Lakh (for 2014-2015) 16.65 Lakh(for 2015-16) 17.06 Lakh(for 2016-17)
9.	Amount spent till date	19.00 Lakh (for 2014-2015) 16.65 Lakh(for 2015-16) 17.06 Lakh(for 2016-17)
10.	Present Status	Complete

Department of E&TC Engineering

1.	Title	Computer Aided Design of Circular micro strip patch antenna array
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	3.0Lacks
4.	Coordinator	Prof.N.T.Markad
5.	Co Coordinator.	Prof.Deepak Ray
6.	Abstract	<p>Design and realization of circular micro strip antenna array in S band is reported in this research paper. It is shown that the design adopted for circular micro strip antenna array is quite accurate. By using the conventional microwave integrated circuit technology compact, lightweight microstrip antenna array can be realized. The desired narrow band is achieved for the circular micro strip antenna array. Circular microstrip antenna array are designed and fabricated on the substrate of glass epoxy which is easily available and low cost. Substrate has a dielectric constant of 4.22 and thickness 1.6mm. Simulation is done using HFSS to achieve the desired results. Also design and fabrication of circular micro strip antenna array done on glass epoxy substrate using photolithographic process. Then measurement is taken on vector network analyzer in anechoic chamber. A simulated and measured result exactly matches with each other with slight shift in frequency due to low quality substrate.</p>
7.	Month and Year of Commencement	5/3/2015
8.	Month and Year of Completion	Aug 2015
9.	Amount received	3 Lacks
10.	Amount spent till date	3Lakh
11.	Present Status	Completed

Department of Chemical Engineering

1.	Title	A Novel Solid-Liquid Circulating Fluidized Bed Reactor: Hydrodynamic and Mixing Studies
2.	Funding/ Sponsoring Agency	Science and Engineering Research Board (SERB) Department of Science and Technology
3.	Amount	28.05 Lakh
4.	Coordinator	Dr. Prakash V. Chavan
5.	Co Coordinator.	Dr. Satchidanand R. Satpute
6.	Abstract	<p>The present proposal intends to construct a novel radially cross flow multistage solid liquid circulating fluidized bed (SLCFB), comprising of a single column which is further divided into sections (i) loading section, and (ii) regenerating section wherein both the steps of utilization loading (adsorption, catalytic reaction, etc.) and regeneration of solid phase could be carried out simultaneously on a continuous mode. The project will mainly focus on the hydrodynamic and mixing studies of the proposed SLCFB which essentially include expansion characteristics of a solid phase and establishing stable operating window, and characterization of non-ideality in the flow of liquid phase for a given system, geometrical, and operating parameters, respectively. In addition, one model experimental system: recovery of heavy metal from aqueous solution will also be carried out to validate the functionality of the proposed SLCFB. The instant eye-catching benefits from this project are: (i) a reduction in operational time as compared to the time required in batch-wise conventional solid liquid fluidized bed (SLFB) and existing SLCFB, leading to reduction in the operational cost, (ii) a reduction in the pressure drop and enhancement in the rate of mass transfer (thus reduction in number of stages) due to the modified stage configuration wherein solid particles follow radially cross flow which results into uniform fluidization and RTD of solid particles. (iii) a reduction of impurity (recalcitrant solute) upto picobillion level</p>

		from feed solution with higher throughput. Therefore, the proposed SLCFB will be highly beneficial in various sectors like petrochemical, bioelectronics, pharmaceutical, biotechnology, medical sciences, etc. where solid- liquid contact plays an important role in determining the overall performance of the system.
7.	Month and Year of Commencement	July, 2014
8.	Month and Year of Completion	June, 2017
9.	Amount received	19.71 Lakh
10.	Amount spent till date	12 Lakh
11.	Present Status	Expansion characteristics study of solid phase is under progress along with construction of solid liquid circulating fluidized bed.

ACADEMIC YEAR 2013-14**Department of Chemical Engineering**

1.	Title	Synthesis using Esterification Reaction
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	2.20 Lakh
4.	Coordinator	Dr. Prakash V. Chavan
5.	Co-Coordinator.	-
6.	Abstract	<p>Esterification is a reaction wherein acid reacts with alcohol to form ester and water. In the present investigation, reaction kinetics for Esterification reaction of citric acid with n-butanol to synthesis tributyl citrate (TBC) in an isothermal stirred batch reactor with continuous removal of water from the reaction mixture has been studied. For the kinetics of catalytic reaction, p-toluene sulfonic acid and methane sulfonic acid used as homogeneous catalysts which are compared with the kinetics of non- catalytic reaction. The reaction temperature were varied from 373K to 413K, the catalysts concentration were varied from 0.5 %(w/w) to 2 %(w/w) and the mole ratio of citric acid over n-butanol is varied from 1:3 to 1:8 for homogeneous catalysts where as for the non- catalytic reaction only temperature profile is studied between 373K to 413K. The effects of temperature, catalyst concentration, and reactant mole ratio on the conversion of citric acid were studied and optimized conditions has been considered at 1:4 mole ratio with 1 %(w/w) catalyst loading at 403K. The irreversible second order kinetic rate equation was proposed to fit the experimental data. The kinetics parameters like rate constant, activation energy and frequency factor were estimated using Arrhenius plots. The conversion of citric acid was also found to be proportional to the mole ratio of citric acid over n-butanol in the feed. It has been observed that the conversion of citric acid</p>

		increases with temperature, mole ratio and concentration of catalyst. Further, autocatalytic reaction could be recommended since colour of final product was found to be 1-2 on gardner scale which is far better than using para-toluene sulfonic acid (7-8) and methane sulfonic acid (4-6).
7.	Month and Year of Commencement	October, 2013
8.	Month and Year of Completion	September, 2014
9.	Amount received	2.20 Lakh
10.	Amount spent till date	2.10 Lakh
11.	Present Status	Completed

Department of Electrical Engineering

1.	Title	Study of dynamic behavior of the doubly fed induction generator used in wind power application under grid fault condition
2.	Funding/ Sponsoring Agency	Institutionally Funded Research Project under TEQIP-II
3.	Amount	2.98 Lakh
4.	Coordinator	Prof.S.D.Bankar
5.	Co-Coordinator.	Dr. D. B. Talange (Prof. COEP)
6.	Abstract	<p>In recent years there is lot of emphasis on use of nonconventional sources of energy particularly wind energy for power generation. Out of the total installed capacity of 20492MW renewable power in the country, Wind Power projects share around 14156MW which is less as compared to other developed countries. This needs to be improved to strengthen the energy security and reliability. The India has vast resources for wind and solar out of which wind energy are commercially viable. However the research and development in this field is not enough for Indian requirements. An attempt is directed through this project to bridge this gap.</p> <p>Doubly fed induction generators have become the most common type of wind turbine generators. These wind plants are required to have grid ride through capabilities. The low- or zero-voltage ride-through (LVRT) requirement is difficult to satisfy for wind plants equipped with doubly fed induction generators (DFIGs). As the stator of a DFIG is directly connected to the grid, the whole DFIG system is sensitive to grid disturbances. Abrupt stator voltage sag due to a grid fault produces a dc component in the stator flux. This dc stator flux induces a large voltage in the rotor circuit and drives the RSC to over modulation. Due to this high induced voltage, a large transient current appears in the rotor circuit. This large transient current may damage the power electronic converters and result in disconnection of the wind turbine generators.</p> <p>One common LVRT solution is to install a crowbar circuit across the rotor terminals. When the rotor over current is detected, the crowbar circuit short circuits the rotor terminals, isolates the converters from the rotor, and the RSC triggering is blocked. This provides conservative protection to the rotor circuit and the RSC and at the same time changes the DFIG to a regular induction machine,</p>

		<p>which absorbs reactive power from the grid. This occurs at the exact same time when the grid needs reactive power support.</p> <p>For large wind plants, it is not only desired to keep the DFIGs connected to the grid, but also desired to maintain the dynamic active and reactive power control of the DFIGs during grid faults. The conservative crowbar protection should be the last choice to limit transient rotor currents. According to the grid codes (FERC) these plants are required to remain connected to the grid in the event of voltage dip. The LVRT requirement is very important but it is difficult to satisfy for wind plants using DFIG system. This is because the stator of DFIG is directly connected to the grid and hence complete DFIG system is very much sensitive to grid disturbances.</p> <p>A successful low voltage ride through (LVRT) scheme is the main requirement for reliable and uninterrupted power generation for wind turbines equipped with DFIG. To enhance LVRT capacity a feed forward current control scheme is designed and implemented for rotor side converter of DFIG and it can be observed that the rotor current is significantly controlled under the sever grid fault condition.</p>
7.	Month and Year of Commencement	January 2014
8.	Month and Year of Completion	January 2015
9.	Amount received	2.98 Lakh
10.	Amount spent till date	2.98 Lakh
11.	Present Status	Completed

Department of Chemical Engineering

1.	Title	Study of removal /degradation of organic pollutants using hybrid techniques.
2.	Funding/ Sponsoring Agency	TEQIP-II
3.	Amount	2.4 lakh
4.	Coordinator	Mrs. S. M. Jadhav
5.	Co-Coordinator.	-
6.	Abstract	<p>Acoustic cavitation has attracted the attention of many researchers due to its ability to degrade the complex organic pollutants. The degradation of pollutants by cavitation occurs by two ways. One thermal decomposition i.e. pyrolysis of the compound trapped in the bubble and second is generation and attack of hydroxyl radicals.</p> <p>Since these methods are not economical if applied individually , Hybrid techniques are proposed to enhance the rate of degradation of organic pollutant. These hybrid methods include the combination of acoustic cavitation with H₂O₂, fenton, photo-fenton, and photocatalytic processes.</p>
7.	Month and Year of Commencement	30 October 2013
8.	Month and Year of Completion	Dec 2014
9.	Amount received	2.4 lakh
10.	Amount spent till date	2.4 lakh
11.	Present Status	Completed

Department of Production Engineering

1.	Title	Synthesis of Polyamide 6,6 nano fibers of various diameters and densities on E- glass fabric by electrospinning process
2.	Funding/ Sponsoring Agency	DRDO R&DE(Engineers) Alandi Road, Dighi, Pune - 15
3.	Amount	5.20 lakh
4.	Coordinator	DrAnandBhalerao
5.	Co-Coordinator.	MrSachinChavan
6.	Abstract	Synthesis of Polyamide 66 Nanofibers by using electrospinning method with different diameters and different densities on the glass fabric to increase the compressive strength of the composite.
7.	Month and Year of Commencement	26 June 2013
8.	Month and Year of Completion	25 June 2015
9.	Amount received	5.20 lakh
10.	Amount spent till date	5.20 lakh
11.	Present Status	Completed

ACADEMIC YEAR 2012-13

Department of Production Engineering

1.	Title	Modernization of Metrology and Quality Control Lab
2.	Funding/ Sponsoring Agency	AICTE, Under MOBROBS
3.	Amount	13.0 lakh
4.	Coordinator	Prof. R. N. Patil
5.	Co-Coordinator.	Shri. M. J. Patil
6.	Abstract	<p>A coordinate measuring machine is a device for measuring the physical geometrical characteristics of an object. This machine may be manually controlled by an operator or it may be computer controlled. Measurements are defined by a probe attached to the third moving axis of this machine. Probes may be mechanical, optical, laser, or white light, amongst others. A machine which takes readings in six degrees of freedom and displays these readings in mathematical form is known as a CMM.</p> <p>CMM has got a number of advantages. The precision and accuracy given by a CMM is very high. It is because of the inherent characteristics of the measuring techniques used in CMM.</p> <p>Following are the main advantages that CMM can offer :</p> <p>Flexibility, Reduced Setup Time, Single Setup Improved Accuracy , Reduced Operator Influence Improved Productivity</p> <p>These features of CMM make it a versatile machine and hence inclusion of the same in curriculum is need of the time.</p>
7.	Month and Year of Commencement	Feb 2013
8.	Month and Year of Completion	Completed 2014
9.	Amount received	13.0 lakh
10.	Amount spent till date	13.0 lakh
11.	Present Status	Completed`

Department of Mechanical Engineering

1.	Title	Modernization of Thermal Lab
2.	Funding/ Sponsoring Agency	BVDU
3.	Amount	13,50000/-
4.	Coordinator	M.A.Kadam
5.	Co-Coordinator.	---
6.	Abstract	Steam power plant Of 1 KW output was installed. we calculate heat balance sheet, heat rate, incremental heat rate, plant efficiency ,dryness fraction, plot graph load and plant efficiency, steam consumption, specific steam consumption, oil fired boiler with fully automated was installed. Steam turbine is of single stage , Impulse with horizontal shaft. Boiler is non IBR oil fired fully automatic-600kg/hr. Eddy current dynamometer of 1 kW,speed 3000rpm.
7.	Month and Year of Commencement	
8.	Month and Year of Completion	Completed
9.	Amount received	13,50000/-
10.	Amount spent till date	13,50000/-
11.	Present Status	Completed 2014-15

ACADEMIC YEAR 2011-12**Department of Chemical Engineering**

1.	Title	Sequestration of CO ₂ from industrial combined heat and power plant by evolution of solid sorbents as a retrofit technology
2.	Funding/ Sponsoring Agency	AICTE-RPS
3.	Amount	5,35,000/-
4.	Coordinator	Mrs. K.S.Kulkarni
5.	Co-Coordinator.	--
6.	Abstract	Carbon dioxide (CO ₂) is a greenhouse gas that occurs naturally in the atmosphere. Human activities, such as the burning of fossil fuels and other processes, are significantly increasing its concentration in the atmosphere, thus contributing to earth's global warming. Most of the adsorbents used for CO ₂ have been synthesized from precursors based on the fossil fuels like petroleum products, acetylene etc. These precursors are destined to get depleted one day. Moreover, the cost of these raw materials is expected to keep on increasing day by day. It is therefore necessary that we look for alternative which is cheap and easily available. The flue gas which contains mixture of CO ₂ , SO ₂ and steam, moisture, NO _x etc. Naturally occurring adsorbent will be used to adsorb CO ₂ which are very cheap as compare to other adsorbents. If we succeed in this search there would never be any fear of them getting depleted.
7.	Month and Year of Commencement	February 2012
8.	Month and Year of Completion	June 2015
9.	Amount received	5,35,000/-
10.	Amount spent till date	5,35,000/-
11.	Present Status	Completed

Department of Civil Engineering

1.	Title	Cavitation Spillways
2.	Funding/ Sponsoring Agency	BVDU
3.	Amount	50,000/-
4.	Coordinator	Dr.A.R.Bhalerao
5.	Co-Coordinator.	V.B.Thombare
6.	Abstract	Physical Model studies are inevitable for modelling of flow over spillway. The numerical model is done using validation of results of physical model. The gain in discharge is at the cost of flow conditions over the spillway. Tendency of shear layer separation increased as the pier was placed downstream.
7.	Month and Year of Commencement	March 2012
8.	Month and Year of Completion	December 2014
9.	Amount received	50,000/-
10.	Amount spent till date	50,000/-
11.	Present Status	Completed

Department of Mechanical Engineering

1.	Title	Experimental and numerical analysis of tube in tube type heat exchanger with dimpled tube and twisted tape inserts.
2.	Funding/ Sponsoring Agency	BVDU Pune
3.	Amount	50,000/-
4.	Coordinator	Prof.D.G.Kumbhar
5.	Abstract	<p>The goal of enhanced heat transfer is to encourage or accommodate high heat fluxes. This result in reduction of the heat exchanger size which generally leads to less capital cost, another advantage is the reduction of the temperature driving force which reduces the entropy generations. In addition, heat transfer enhancement enables heat exchangers to operate at smaller velocity, but still achieve the same or even higher heat transfer coefficient. This means that a reduction of pressure drop, corresponding to less operating cost, may be achieved. All these advantages have made heat transfer enhancement technology attractive in heat exchanger applications. Heat transfer enhancement techniques can be classified into two types as passive methods and active methods. In passive methods, inserts are used in the flow passage to augment the heat transfer rate, are advantages compared with active techniques, because the insert manufacturing process is simple and these techniques can be easily employed in an existing heat exchanger. In the design of compact heat exchangers, passive techniques of heat transfer augmentation can play an important role if a proper passive insert configuration can be selected according to heat exchanger working condition. The passive methods also uses techniques such as surface coating, rough surfaces, extended surface, swirl flow devices, convoluted (twisted) tube, additives of liquids and gases etc. The other is the active method which requires extra power sources, e.g. mechanical aids, flow induced vibrations, surface fluid vibrations, injection and suction of the fluid, jet impingement and use of electrostatic fluids.</p>
6.	Month and Year of Commencement	2011-12
7.	Month and Year of Completion	2014-15
8.	Amount received	50,000/-
9.	Amount spent till date	50,000/-
10.	Present Status	Completed

Department of Production Engineering

1.	Title	An Experimental analysis of Pulse Electrochemical Machining
2.	Funding/ Sponsoring Agency	Institute of Engineers , India(IEI)– Research and Development Grant
3.	Amount	Rs. 0.6 lakh
4.	Coordinator	Prof P.V. Jadhav
5.	Co-Coordinator.	--
6.	Abstract	Pulse electrochemical machining is an electrolytic process and it is based on the phenomena of electrolysis. The tool electrode used in the process does not wear and therefore soft metals can be used as tools to form shapes of harder work pieces, unlike conventional machining methods. This project is focused on analyzing how different parameters affect the MRR to find the ideal conditions of optimal performance. This also gives the insight of how the use of rotating electrode enhances the surface finish.
7.	Month and Year of Commencement	August 2011
8.	Month and Year of Completion	August 2012
9.	Amount received	60000/-
10.	Amount spent till date	60000/-
11.	Present Status	Completed

Department of Mechanical Engineering

1.	Title	Heat transfer and geometrical considerations in solar parabolic through collector
2.	Funding/ Sponsoring Agency	BVDU Pune
3.	Amount	50,000/-
4.	Coordinator	Prof.M.A.Kadam
5.	Co-Coordinator.	-----
6.	Abstract	<p>A trough collector having a length of 3m and an aperture of 1m is required to be made with it's the collector tube placed at its focus to collect solar energy for heating water. Design the collector using suitable reflecting surface preferably strips of reflecting mirrors / aluminum foil. Also design the support structure for good stability.</p> <p>The absorbing tube should have diameter of 50 mm and should be painted black (for good absorbitivity enclosed in a 100 mm transparent plastic / glass cylindrical enclosure. Design a structure to place it at the focus of the reflector. Make survey of black paints available in the market and test their absorbitivity. Use a paint having maximum absorbitivity. Suggest suitable mechanisms for hourly tracking the collector for orienting the sun for receiving maximum radiation.</p>
7.	Month and Year of Commencement	2011-12
8.	Month and Year of Completion	2014-15
9.	Amount received	50,000/-
10.	Amount spent till date	50,000/-
11.	Present Status	Completed