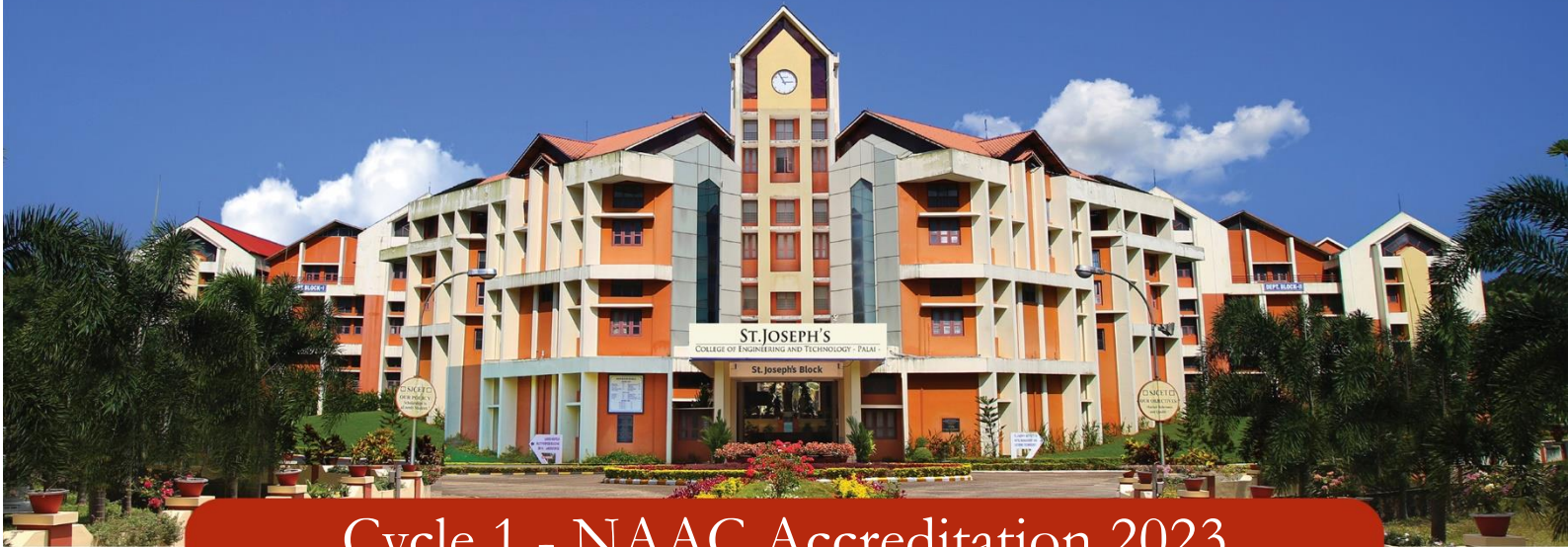




# ST. JOSEPH'S

COLLEGE OF ENGINEERING  
AND TECHNOLOGY,  
- PALAI -

Choondacherry P.O., Palai, Kottayam Pin 686579, Kerala, India  
Phone: +91 4822-239700, 239301, 239302  
Email: info@sjcetpalai.ac.in • Website: www.sjcetpalai.ac.in



Cycle 1 - NAAC Accreditation 2023

Criterion - 3

## Research, Innovations & Extension

3.1.1 Research Fund in the Academic year 2018-19

*Submitted to:*



**National Assessment and Accreditation Council**



# ST. JOSEPH'S

COLLEGE OF ENGINEERING  
AND TECHNOLOGY,  
- PALAI -

### 3.1.1 Grants received from Government and non-governmental agencies for research projects, endowments in the institution during the academic year 2018-19

S.No	Name of the Principal Investigator/Co-investigator	Department of Principal Investigator	Project Title	Amount Sanctioned/Utilization	Name of the Funding Agency
1	Dr. Lijo Paul	ME	<a href="#">Experimental Investigation and performance optimization of micro AJM process</a>	1,30,000 <a href="#">Utilization</a>	<a href="#">CERD - Research Seed Money Scheme - APJAKTU-Kerala</a>
2	Dr. Jilse Sebastian	ME	<a href="#">Experimental investigations on performance and emission characteristics of CI engine fuelled by plastic oil derived from polyethylene waste plastic</a>	1,40,000 <a href="#">Utilization</a>	<a href="#">CERD - Research Seed Money Scheme - APJAKTU-Kerala</a>
3	Dr. Rajesh Baby/ Mr. Justin Jose	ME	<a href="#">Development of PEMFC stack for domestic applications</a>	6,00,000 <a href="#">Utilization</a>	<a href="#">ANERT</a>
4	Dr. Lijo Paul	ME	<a href="#">3D printer filament from waste plastic</a>	50,000 <a href="#">Utilization</a>	<a href="#">APJAKTU-Kerala</a>
<b>Total Amount Sanctioned in Lakhs</b>				<b>9.2</b>	



# APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

CET campus, Thiruvananthapuram - 695 016

Ph: 0471 2598122; Fax: 2598522 [www.ktu.edu.in](http://www.ktu.edu.in) Email: [university@ktu.edu.in](mailto:university@ktu.edu.in)

No. KTU/RESEARCH 2/3894/2018

Dated: 01.12.2018

From

The DEAN (Research)

To

The Principal

St. Joseph College of Engineering

Palai, Kottayam

Sir

Sub:- APJAKTU - CERD - Research Seed Money Scheme - Projects Selected for funding -  
reg:-

I am glad to inform you that the project proposals as listed in Annexure I are provisionally selected for funding under Research Seed Money (RSM) scheme of KTU.

The expenditure should be incurred as per the sanctioned budget heads and in accordance with terms and conditions given in Annexure II. Format of MOU to be furnished by the college is given in Annexure III

The Principal Investigators may please be directed to forward request (in Annexure II) for releasing the fund with Bank Account details. The fund will be released only after settling pending accounts of the principal investigator in CERD, if any. Any request received after three months from the date of this letter will not be considered.

Yours faithfully  
Dr. VRINDA V NAIR \*  
DEAN (Research)

Copy To

1. Dr. Lijo Paul

Associate Professor in Mechanical  
Engineering

2. Dr. Jilse Sebastian.

Associate Professor in Mechanical  
Engineering

\* This is a computer system (Digital File) generated letter. Hence there is no need for a physical signature.



**List of Research Seed Money Projects selected for funding--October 2018**

List of Research See Money Projects selected for funding-Government Engineering Colleges October 2018  
College of Engineering Trivandrum

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Jayasree M S Associate Professor	EEE	Design and Development of E waste PCB Component separator and segregator	50000	150000	200000	30000	140000	10000	5000	5000	10000
2	Dr. J S Savier Professor	EEE	Design and development of a micro phasor measurement unit	120000	78000	198000	24000	150000	10000			14000
3	Dr. Francis M Fernandez Professor	EEE	Quantification of Harmonic injection in power system using Non- Active power theory	175000	25000	200000	10000	175000	2000			13000
4	Deepta M U Assistant Professor	EEE	Solar assisted electric vehicle with one convertor for charging and motor driving	75000	62875	137875	14575	119300	2000			2000
5	Dr.Lalpriya P S Assistant Professor	EEE	Design and Implementation of an energy efficient robust controller for an electric vehicle with In-wheel motors.	100000	98000	198000	8000	175000	5000	5000		5000
6	Dr. Sreeja S Assistant Professor	EEE	Design and development of a humanoid robot	100000	99843	199843	20000	159843				20000
7	Sheena Hassan Assistant Professor	CE	Modelling of flow through Gabion Weirs	180000	20000	200000	30000	160000				10000
8	Dr. Girija K Associate Professor	CE	Experimental study on the structural behaviour of post tensioned beams with parabolic cable profile	180000	20000	200000	40000	130000	10000			20000
9	Harish T V Associate Professor	ME	Experimental Study of Changes in Micro Mechanism of Wear With Vibration in Stroke Length under Reciprocating Sliding Conditions of A390-SiCp AND A336-SiCp Composites.	180000	20000	200000	40000	120000	20000			20000
10	K S Sajikumar Assistant Professor	ME	Experimental and numerical characterisation of a non contact handling device	192500	7500	200000	11290	173710	5000			10000

RIT Kottayam





Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Renu Jose Asst Prof	ECE	Machine learning based channel equalization in Digital communication Systems	169000	31000	200000	30000	130000	16000	2000	16000	6000
2	Archana A P Assistant Professor	Arch	Designing of building envelope through passive cooling strategies for warm humid climate	130000	18000	148000	3000	106000	15000	5000	14000	5000

**Govt College of Engg, Kannur**

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Sudheesh Kumar C P Assistant Professor	ME	Investigation of human body vibration to minimise occupational health hazards	155000	10000	165000	40000	105000	15000			5000

**List of Research See Money Projects selected for funding-Government supported Engineering Colleges**

**Sree Chitra Thirunal College of Engg**

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Jayasudha J S Professor	CSE	Interactive and Informative learning using Augmented and Virtual Reality	85000	30000	115000	10000	85000	10000			10000

**TKM College of Engineering Kollam**

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Bijuna Kunju Professor & HOD	EEE	Self sustainable nanogrid for homes	150000	46000	196000	10000	166000	10000			10000

**NSS College of Engineering**

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Venugopal G Associate Professor	ECE	Characterization of effect of muscle fiber types in fatigue progression using surface electromyography signals	157500	37500	195000	40000	110000	20000		15000	10000
2	Dr. Resmi G Professor	CE	Development of Bio Compost-System for treating Degradable solid waste and production of manure	175000	20000	195000	35000	140000	10000			10000

**List of Research See Money Projects selected for funding-NBA Accredited Private Engineering Colleges October 2018**

Saintgits college of Engineering

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Mahendran N Professor	ECE	Design and development of solar photo voltaic system with reduced current ripple KY boost converter	72500	100000	172500	45000	77500	25000			25000
2	Lakshmi Mohan Assistant Professor	FT	Isolation and characterization of plastic degrading microbes	85000	30000	115000	30000	55000	15000			15000
3	Er. Harinarayanan Nampoothiri M G Assistant Professor	ECE	Mud and manhole cleaning robot with optimized control parameters	110000	30000	140000	40000	60000	20000			20000
4	Er. Vinayakumar B Assistant Professor	ECE	Power generation using controlled gravitational water vortex power plants (GWVPP) in rural waterbodies of Kerala	110000	30000	140000	40000	60000	20000			20000
5	Jithin Kurian Andrews Assistant Professor	CE	Distress identification & estimation in flexible pavements using image processing	65000	7000	72000		60000	5000			7000
6	Dr. Jacob T Varghese Professor	ME	Energy efficient green structures	107000	20000	127500	40000	47500	20000			20000

Vimal Jyothi Engineering College

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. V. Sampath Kumar Professor	ECE	Putnamatic- Automatic puttu making machine	136750	20000	156750	20000	116750	10000			10000
2	Dr. G Ghan Devadhas Professor	ECE	Development of a smart SCADA structure for intelligent rainfall prediction in Kerala and real time flood level alerting system	129000	30000	159000	40000	79000	20000			20000

Adi Shankara Institute of Engg and Technology, Kalady

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
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1	Dr. Ragesh G.K Professor	ECE	Implementation of an autonomous Wireless Body Area Network (WBAN) for IoT enabled healthcare applications using wearable sensor node with solar energy harvesting	92500	22000	114500	25000	62500	12000	15000
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**Mar Baselious College of Engg Trivandrum**

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Jisha S V Asst Prof	CE	Seismic soil structure interaction response of structures subjected to pounding	50000	12000	62000	15000	30000	7000			10000

**Rajagiri School of Engg & Technology**

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Harikrishnan C Assistant Professor	ME	Fabrication and Analysis of Al-Li Surface Composite Using Friction Stir Processing	105000	20000	125000	30000	55000	20000			20000
2	Dhanya P M Assistant Professor	CSE	Criminal policing system	15000	15000	30000	20000		5000			5000

**St. Josephs College of Engg Palai**

Sl No	Name of Principal Investigator	Branch	Title of the Project	1st Instalment	2nd Instalment	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Lijo Paul Associate Professor	ME	Experimental investigations and performance optimization of the micro abrasive jet machining	115000	15000	130000	40000	60000	10000			20000
2	Dr. Ilise Sebastian Associate Professor	ME	Experimental investigations on the performance and emission characteristics of CI engine fueled by plastic oil derived from polyethylene waste plastic	120000	20000	140000	40000	60000	20000			20000

## Annexure II

### **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY Centre for Engineering Research and Development Request for releasing RSM grant**

Title of Project:

Date of sanction:

Amount sanctioned:

Account No and bank details:

#### Terms & Conditions for Research Seed Money Scheme

1. The amount sanctioned for the project shall be deposited in a separate joint A/c of Principal Investigator and Head of the institution where the Principal Investigator works. (Name of A/c: CERD Research Seed Money - File No.)
2. The maximum duration of the project will be three years from the date of start of the project
3. The amount has to be utilized as per budget provision under each head. It is the discretion of the University to settle amount towards the purchase of those items not clearly mentioned, if any, in the project proposal.
4. The purchase of equipments shall be in accordance with the store purchase rules. All equipment purchased will be the property of CERD and the stock entry of the items purchased shall be maintained in the College signed by the Investigator, Lab in charge and Principal. Purchase of computers/peripherals is not allowed unless specifically mentioned in the sanction order.
5. For Private self financing Colleges, 50% of the actual Equipment cost subjected to the maximum of sanctioned amount will be reimbursed by KTU if and only if the proof of remittance of other 50% is produced by the college.
6. The stock entries of consumables purchased shall also be done in the consumables stock register of College. Purchase of stationery shall be for project purpose only.
7. Books and literature purchased should be taken into the Stock Register of Central Library or Department library and then distributed to the investigators.





8. The interest accrued will also be accounted in the project.
9. On completion of the project, detailed report of the research work (hard and soft copies), audited statement of accounts and Utilization Certificate in the prescribed format duly attested by the head of the institution shall be submitted within one month on completion of the project for settlement of accounts.
10. If the project is not completed within the time limit, the grant amount should be reimbursed along with the interest accrued.
11. The CERD reserves the right to terminate the project at any stage if it is convinced that the grant has not been properly utilized or appropriate progress is not being made. In addition, the CERD may designate Scientist/Specialist or an Expert Panel to periodically review the work done. The Principal Investigator has to appear for the periodic review meetings.
12. If the PI to whom the project has been sanctioned, leaves the Institution, the Head of Institution/PI shall inform the same to the CERD and in consultation with the CERD, evolve steps to ensure successful completion of the project, before relieving the PI.
13. Investigators must acknowledge the CERD in reports and technical/scientific papers published based on the research work done under the project. Investigators are requested to publish some of the research papers emerging out of the project work in leading Journals.
14. If the results of research are to be legally protected by way of patent/copy rights etc. the results should not be published without action being taken to secure legal protection for the research results.
15. The knowledge generated from the project will be the property of the CERD and should be properly acknowledged. Transfer of technology generated shall be done in consultation with the CERD.

We agree to the terms and conditions stated above. Please transfer the amount to the above bank account.

Signature of Principal Investigator:

Name:

Designation:

Signature of Head of Institution:



Name:

Office Address:

Seal



**Annexure III**  
**(Stamp paper Rs 200)**  
**MEMORANDUM OF UNDERSTANDING [MOU]**  
**BETWEEN**  
**-Name of Self Financing Engineering College-**  
**AND**  
**APJ Abdul Kalam Technological University (KTU),**  
**THIRUVANANTHAPURAM**

This Memorandum of Understanding is entered into at Thiruvananthapuram on this --- Day of Month Year

BETWEEN

**-Name of Self Financing Engineering College- affiliated to APJ Abdul Kalam Technological University (herein after referred to as COLLEGE) which expression shall unless it be repugnant to the context or meaning thereof to be deemed to mean and include its successors and assigns, represented by The Principal, ---Name of college- place of college -, of the ONE PART.**

AND

**APJ Abdul Kalam Technological University, CET campus, Thiruvananthapuram-695016 (herein after referred to as KTU) which expression shall, unless it be repugnant to or inconsistent with subject or context thereof, include and be deemed to include their heirs, successors and assigns, represented by The Dean (Research), APJ Abdul Kalam Technological University, Thiruvananthapuram 695016 of the OTHER PART.**

**1. TERMS OF UNDERSTANDING**

- 1.1. This memorandum of understanding lists out the terms of releasing and utilization of CERD research seed money fund sanctioned to a faculty of COLLEGE for the year -----.
- 1.2. The scheme is constituted for the purpose of providing assistance in the form of grants to initiate research work in Engineering and Technology with particular relevance to the State of Kerala in the economic and industrial development.



- 1.3. Grant will be released to the principal investigator of the project through the Head of the institution.
- 1.4. The maximum duration of the project will be three years from the date of start of the project
- 1.5. On completion of the project, one copy of the final project report on the work done should be sent to the CERD along with the utilization certificate (UC) and statement of expenditure (SE).
- 1.6. The institute will maintain separate audited accounts for the project.
- 1.7. The institute will not entrust the implementation of the work for which the grant is being sanctioned to another institution nor will it divert the grant receipts to other institute as assistance.
- 1.8. The CERD reserves the right to terminate the project at any stage if it is convinced that the grant has not been properly utilized or appropriate progress is not being made. In addition, the CERD may designate a Scientist/Specialist or an Expert Panel to review the work done.
- 1.9. If the PI to whom the project has been sanctioned leaves the Institution, the Head of Institution/PI will inform the same to the CERD and in consultation with the CERD, evolve steps to ensure successful completion of the project, before relieving the PI.
- 1.10. Investigators must acknowledge the CERD in reports and technical/scientific papers published based on the research work done under the project. Investigators are requested to publish some of the research papers emerging out of the project work in leading Journals.
- 1.11. If the results of research are to be legally protected by way of patent/copy rights etc. the results should not be published without action being taken to secure legal protection for the research results.
- 1.12. The knowledge generated from the project will be the property of the CERD and should be properly acknowledged. Transfer of technology generated shall be done in consultation with the CERD.
- 1.13. For Private self financing Colleges, 50% of the actual Equipment cost subjected to the maximum of sanctioned amount will be reimbursed by KTU if and only if the proof of remittance of other 50% is produced by the COLLEGE.
- 1.14. The equipment details must be entered in the stock register of the college and signed by the Investigator, Lab in charge and Principal.
- 1.15. The college should submit annually the status and details of earlier grants received from KTU with pending statement if any.



- 1.16. The grant amount should be deposited in a separate bank account in the name of the Principal investigator and Head of Institution jointly.
- 1.17. The interest accrued shall also be accounted in the project.
- 1.18. If the project is not completed within the time limit, the grant amount should be reimbursed along with interest accrued.

We agree to the terms and conditions stated above.

## **2. SCOPE OF MOU**

Nothing in this Memorandum is intended to or shall be deemed to establish an exclusive relationship between the parties or to restrict any activities that either party would otherwise be able to undertake. Nothing in this Memorandum is intended to or shall be deemed to establish any partnership or joint venture between the parties or constitute any activities that either party would otherwise be able to undertake.

## **3. PERIOD**

This MOU shall be perpetual. This agreement will be amended or modified by the University at any time.

## **4. DISPUTE RESOLUTION AND ARBITRATION**

This memorandum of understanding shall be governed by the laws of Union of India and State of Kerala. Any dispute arising with this MOU shall be brought to the notice of the Vice-chancellors of the parties who shall try to resolve them, failing which legal reasoning be taken in the jurisdiction of court in Thiruvananthapuram.

The terms and conditions of this memorandum of understanding shall not be disclosed to any third parties by any party of this memorandum of understanding without the prior written consent of both parties.

## **5. FORCE MAJEURE**

Without prejudice to accrued liabilities and rights, no party shall have any liability whatsoever to the other Party or be deemed to be in default by reason of delay or failure in performance under this memorandum of understanding to the extent that such delay or failure is caused by or arises from acts or circumstance or events beyond the reasonable control of that party, including but not limited to acts of god, acts or regulations of any governmental authority, war or national emergency, accident, fire, riot, strikes, lock-outs, industrial disputes, natural catastrophes or epidemics.



Each Party shall bear its own losses arising from such force majeure event(s), if any.

## 6. INTELLECTUAL PROPERTY

All prior information, design and data existing with either party before the signing of this MoU (pre-existing IP) shall be the sole property of the concerned party. All Intellectual Property including design information, designs, source codes and data generated through the collaboration under this MOU shall be as mutually agreed in writing and also as per the guide line of the funding agency, if such an agency is involved. Any IPR arising specifically out of this collaboration will be owned by both parties, except when mutually agreed in writing otherwise.

**IN WITNESS WHEREOF**, the parties hereto have caused this memorandum of understanding to be executed in duplicate, through their representatives at Thiruvananthapuram in the day and year first above written:

Now the memorandum of understanding witnesses as follows.

**Principal**  
**Name of College**  
**University**  
**Place**

**Dean (Research)**  
**APJ Abdul Kalam Technological**  
**Thiruvananthapuram 695016**

**Witness: 1**

Signature :

Name :

**Witness: 1**

Signature :

Name :

**Witness: 2**

Signature :

**Witness: 2**

Signature :



## UTILIZATION CERTIFICATE

Certified that out of Rs. 1,30,000 sanctioned by Center for Engineering Research and Development of APJ Abdul Kalam Technological University towards financial assistance for the student project titled '**Experimental Investigations and Performance Optimization of the Micro Abrasive Jet Machining on Non-Conducting Hard Materials with Proper Dust Absorption Mechanism**' (UO No. **KTU/RESEARCH 2/3894/2018** dated **01-12-2018**) an amount of Rs. 93,514/- was utilized from an available fund of Rs.130000 (from the previous financial year) for the purpose for which it was sanctioned, leaving a balance of Rs.36,486 /- at the end of the financial year 2019-20 for utilization in the subsequent year.

*APJ*  
Lyo Paul  
10/4/20  
Name and signature of  
Principal Investigator

*[Signature]*  
Seetha Geetha  
Name and signature of  
Finance Officer

*[Signature]*  
Dr. Madhukumar  
Name and signature of  
Head of the Institution



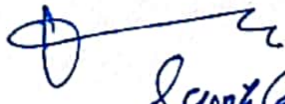
PRINCIPAL  
ST. JOSEPH'S COLLEGE OF  
ENGG. & TECHNOLOGY, PALAI

## UTILIZATION CERTIFICATE

Certified that out of Rs. 1,30,000 sanctioned by Center for Engineering Research and Development of APJ Abdul Kalam Technological University towards financial assistance for the student project titled ' : **Experimental Investigations and Performance Optimization of the Micro Abrasive Jet Machining on Non-Conducting Hard Materials with Proper Dust Absorption Mechanism**' (UO No. KTU/RESEARCH 2/3894/2018 dated 01-12-2018) an amount of Rs. 18,650/- was utilized from an available fund of Rs.36,486 (from the previous financial year) for the purpose for which it was sanctioned, leaving a balance of Rs.17,836/- at the end of the financial year 2020-21 for utilization in the subsequent year.

  
Lijo Paul 9/4/21

Name and signature of  
Principal Investigator

  
Suresh George

Name and signature of  
Finance Officer

  
Dr. Madhukumar S

Name and signature of  
Head of the Institution

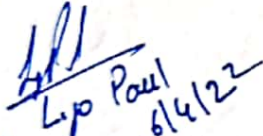


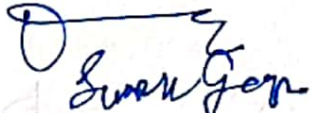
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ST. JOSEPH'S COLLEGE OF  
ENGG. & TECHNOLOGY, PALAKKAD




## UTILIZATION CERTIFICATE

Certified that out of Rs. 1,30,000 sanctioned by Center for Engineering Research and Development of APJ Abdul Kalam Technological University towards financial assistance for the student project titled ' : Experimental Investigations and Performance Optimization of the Micro Abrasive Jet Machining on Non-Conducting Hard Materials with Proper Dust Absorption Mechanism' (UO No. KTU/RESEARCH 2/3894/2018 dated 01-12-2018) an amount of Rs. 17,836/- was utilized from an available fund of Rs.17,836 (from the previous financial year) for the purpose for which it was sanctioned, leaving a balance of Rs.0 /- at the end of the financial year 2021-22 for utilization in the subsequent year.

  
Name and signature of  
Principal Investigator

  
Name and signature of  
Finance Officer


  
Dr. Madhukumar  
Name and signature of  
Head of the Institution

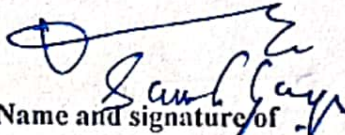


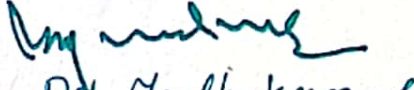
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ST. JOSEPH'S COLLEGE OF  
ENGG. & TECHNOLOGY, PALAI

## UTILIZATION CERTIFICATE

Certified that out of Rs 1,40,000/- sanctioned by Centre for Engineering Research & Development (CERD)- Research Promotion Scheme towards financial assistance for the project/student project titled "Experimental investigations on performance and emission characteristics of CI engine fueled by plastic oil derived from polyethylene waste plastic", (File No. No. KTU/RESEARCH 2/3894/2018) an amount of Rs zero was utilized from an available fund of Rs. 1,40,000/- (from the previous financial year) for the purpose for which it was sanctioned, leaving a balance of Rs. 1,40,000/- at end of the financial year 2019 (31/03/2019) for utilization in subsequent year.

  
Dr. Jilse Sebastian  
Name and signature of  
Principal Investigator

  
Name and signature of  
Finance Officer

  
Dr. Madhukumar  
Name and signature of  
Head of the Institution



PRINCIPAL  
ST. JOSEPH'S COLLEGE OF  
ENGG. & TECHNOLOGY, PALAI

## UTILIZATION CERTIFICATE

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*Dr. Silse Sebastian*  
22/7/20

Dr. Silse Sebastian  
Name and signature of  
Principal Investigator

*Dr. Senthil Kumar*

Name and signature of  
Finance Officer

*Dr. Madhukumar*

Name and signature of  
Head of the Institution



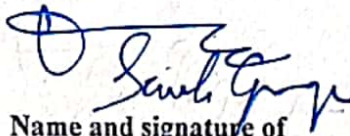
PRINCIPAL  
ST. JOSEPH'S COLLEGE OF  
ENGG. & TECHNOLOGY, PALAI

## UTILIZATION CERTIFICATE

Certified that out of Rs. 1,40,000/- sanctioned by Centre for Engineering Research & Development (CERD)- Research Promotion Scheme towards financial assistance for the project/student project titled "Experimental investigations on performance and emission characteristics of CI engine fueled by plastic oil derived from polyethylene waste plastic", (File No. No. KTU/RESEARCH 2/3894/2018) an amount of Rs. zero was utilized from an available fund of Rs. 19,000 /- (from the previous financial year) for the purpose for which it was sanctioned, leaving a balance of Rs. 19,000 /- at end of the financial year 2021 (31/03/2021) for utilization in subsequent year.

  
15/4/21

Dr. Dilse Sebastian  
Name and signature of  
Principal Investigator



Name and signature of  
Finance Officer

  
Dr. Madhukumar


Name and signature of  
Head of the Institution

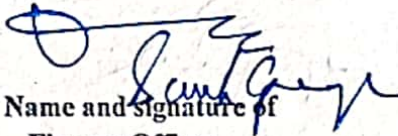


PRINCIPAL  
ST. JOSEPH'S COLLEGE OF  
ENGG. & TECHNOLOGY, PALAI

## UTILIZATION CERTIFICATE

Certified that out of Rs. 1,40,000/- sanctioned by Centre for Engineering Research & Development (CERD)- Research Promotion Scheme towards financial assistance for the project/student project titled "Experimental investigations on performance and emission characteristics of CI engine fueled by plastic oil derived from polyethylene waste plastic", (File No. No. KTU/RESEARCH 2/3894/2018) an amount of Rs. zero was utilized from an available fund of Rs. 19,000 /- (from the previous financial year) for the purpose for which it was sanctioned, leaving a balance of Rs. 19,000 /- at end of the financial year 2022 (31/03/2022) for utilization in subsequent year.

  
12/4/22  
Dr. Gilse Sebastian  
Name and signature of  
Principal Investigator

  
Name and signature of  
Finance Officer


  
Name and signature of  
Head of the Institution

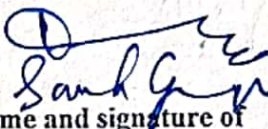
**DR. V.P. DEVASSIA**  
Principal  
**St. Joseph's College of Engg. & Technology**  
Palai, Kerala - 686 579



## UTILIZATION CERTIFICATE

Certified that out of Rs. 1,40,000/- sanctioned by Centre for Engineering Research & Development (CERD)- Research Promotion Scheme towards financial assistance for the project/student project titled "Experimental investigations on performance and emission characteristics of CI engine fueled by plastic oil derived from polyethylene waste plastic", (File No. No. KTU/RESEARCH 2/3894/2018) an amount of Rs. zero was utilized from an available fund of Rs. 19,000 /- (from the previous financial year) for the purpose for which it was sanctioned, leaving a balance of Rs. 19,000 /- at end of the financial year 2023 (31/03/2023) for utilization in subsequent year.

  
18/4/23  
Dr. G. S. Sebastian  
Name and signature of  
Principal Investigator

  
Name and signature of  
Finance Officer

  
Name and signature of  
Head of the Institution

**DR. V.P. DEVASSIA**  
Principal  
St. Joseph's College of Engg. & Technology  
Palai, Kerala - 686 579





അനന്തം  
**ANERT**

ഭരണഭാഗം - മാതൃഭാഗം

GENERATED THROUGH  
eOffice

**AGENCY FOR NON-CONVENTIONAL ENERGY & RURAL TECHNOLOGY**  
DEPARTMENT OF POWER, GOVERNMENT OF KERALA  
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in  
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

ANERT-TECH/112/2019-S(NEP)

19/10/2019

To,

The Principal,  
St. Joseph's College of Engineering and Technology,  
Choondacherry PO, Palai  
Kottayam-686 579

Sir,

Sub: Approval for Financial Support-SRI-23/2018-19-Development of PEMFC Stack for Domestic Applications

Ref: 1) Project Proposal SRI-23/2018-19 from Dr. Rajesh Baby, Associate Professor and HoD, Department of Mechanical Engineering, SJ CET  
2) Lr. No. ANERT-TECH/112/2019-S(NEP) dt. 29/05/2019  
3) Lr. No. SJ CET/ME/ANERT/P-002/2018-19 dt. 13/06/2019 from The Principal, SJ CET

On evaluation of the Project Proposal SRI-23/2018-19 on "Development of Proton Exchange Membrane Fuel Cell (PEMFC) Stack for Domestic Applications" & the clarifications received vide Ref 1 and 3 respectively and according to the Guidelines, maximum amount of Financial Support eligible for execution of this project proposal is calculated to be Rs. 463866/- (Rupees Four Lakhs Sixty Three Thousand Eight Hundred and Sixty Six Only) as given below:

BUDGET PROPOSED FOR PROJECT No. SRI-23/2018-19						
Sl. No.	Item	Proposed Cost			Amount Proposed for Approval (INR)	Remarks
		Quantity (No.)	Rate (INR)	Amount in INR		
<b>A</b>	<b>CONSUMABLES</b>					
1	Nafion solution, Pt on carbon catalyst, Nafion Membrane and Graphite plate (set)	1	123900	123900	123900	Individual tax invoices to be collected during purchase
			Total	123900	123900	
	<b>TESTING</b>					
1	Testing of fuel cell stack and single cell (per hour)	100	731.6	73160	73160	
			Total	73160	73160	
<b>B</b>	<b>EQUIPMENT</b>					
1	PEM Fuel Cell with an active area of bi polar plate of 50 sq. cm, serpentine flow field with channel to landing ratio of 1	10	29736	297360	148680	Only 50% funding for equipment
			Total	297360	148680	
<b>C</b>	<b>MANPOWER</b>					
1	Project Fellow (1 post) per month	3	15000	45000	45000	1 Project Fellow and 1 Technical Assistant for 3 months
2	Technical Assistant (1 post) per month	3	5000	15000	15000	
			Total	60000	60000	
<b>D</b>	<b>TRAVEL</b>	Lumpsum		40000	15000	
<b>E</b>	<b>Project Cost without contingencies and Overhead</b>				420740	
<b>F</b>	<b>CONTINGENCIES</b>	Lumpsum		25000	21037	Limited to 5% of E
<b>G</b>	<b>Project Cost without Overhead</b>				441777	
<b>H</b>	<b>OVERHEAD</b>	Lumpsum		25000	22089	Limited to 5% of G
<b>I</b>	<b>Grand Total</b>			526260	463866	

It has been decided to sanction an amount of Rs. 4,00,000/- (Rupees Four Lakhs Only) as initial Financial Support for the project and decision regarding the balance amount shall be taken after scrutiny according to the Guidelines of the programme. The details of the project approved are given below:

1	Name of the project	Development of Proton Exchange Membrane Fuel Cell (PEMFC) Stack for Domestic Applications
2	Reference Number	SRI-23/2018-19
3	Name and Designation of the PI	Dr. Rajesh Baby, Associate Professor and Head of the Department, Department of Mechanical Engineering, SJCT, Palai
4	Financial Support	Maximum Eligible Amount: Rs. 4,63,866/- Initial Financial Support Sanctioned: Rs. 4,00,000/- To be Decided after Scrutiny: Rs. 63,866/-



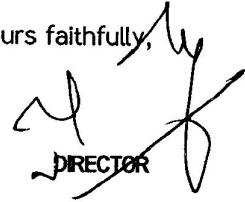
5	Objectives	1) Development of a fuel cell stack for domestic applications 2) Experimental Investigations to determine the effect of fuel flow rate, hydrogen flow rate and temperature on the performance of a fuel cell stack
6	Last Date for completion of the Project	28-2-2020

Release Rs. 148680/- (Rupees One Lakh Forty Eight Thousand Six Hundred and Eighty Only) as first instalment as per Guidelines being the cost of equipment can be considered on receipt of the following:

- 1) An Undertaking regarding willingness to carry out the project with the sanctioned budget, objectives & time schedule and non-receipt of fund from other external sources (in the attached format)
- 2) Details of the Bank Account opened in the name of the Head of the Institution specifically for implementation and management of this project and
- 3) Statement of Account of the above bank account showing remittance of 50% of equipment cost (Rs. 148680/-) by the recipient organisation.

You are requested to arrange for submission of the required documents/details so that release of first instalment of Financial Support can be initiated.

Yours faithfully,

  
DIRECTOR

(To be provided in the letterhead)

**UNDERTAKING**

I, ..... (Name and Designation of the Principal Investigator) hereby express my willingness to carry out the Project titled “.....” with the sanctioned budget, objectives & time schedule and confirm that I have not received/sought any external funding for the Project submitted to ANERT for obtaining Financial Support. I also undertake not to seek/receive external funding for this project and to meet internally any expenditure over and above the amount sanctioned by ANERT.

**Details of the Project:**

1	Name of the project	Development of Proton Exchange Membrane Fuel Cell (PEMFC) Stack for Domestic Applications
2	Reference Number	SRI-23/2018-19
3	Name and Designation of the PI	Dr. Rajesh Baby, Associate Professor and Head of the Department, Department of Mechanical Engineering, SJ CET, Palai
4	Financial Support	Maximum Eligible Amount: Rs. 4,63,866/- Initial Financial Support Sanctioned: Rs. 4,00,000/- To be Decided after Scrutiny: Rs. 63,866/-
5	Objectives	1) Development of a fuel cell stack for domestic applications 2) Experimental Investigations to determine the effect of fuel flow rate, hydrogen flow rate and temperature on the performance of a fuel cell stack
6	Last Date for completion of the Project	28/02/2020

Signature, Name and Designation of PI

Signature, Name and Designation of HoI

Place:

Date:

(Office Seal)



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**ANERT**

Agency for New and renewable Energy Research and Technology  
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി  
DEPARTMENT OF POWER, GOVERNMENT OF KERALA  
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in  
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331805 • Fax: (+91-471) 2329853



### PROCEEDINGS OF THE Director

(Present: Amit Meena I A S)

#### Abstract

Supporting R&D and Innovation-Project Proposal SRI-23/2018-19 on "Development of Proton Exchange Membrane Fuel Cell (PEMFC) Stack for Domestic Applications" from Dr. Rajesh Baby, Associate Professor and Head of the Department, Department of Mechanical Engineering, SJ CET, Palai – Final settlement and Release of Rs. 1,58,680/- . – Sanction Order.

File No.: ANERT-TECH/112/2019-S(NEP)

AF **796** /R&D/ANERT/2021

24/03/2021

- Ref: 1) Lr. No. ANERT-TECH/112/2019-S(NEP) dt. 19/10/2019  
2) ANERT Proceedings AF 532/R&D/ANERT/2019 dt. 29/11/2019  
3) ANERT Proceedings AF 872/R&D/ANERT/2020 dt. 14/03/2020  
4) Project Completion Report dt. 11/08/2020 submitted by Dr. Rajesh Baby  
5) MoM of TAC meeting held on 18/09/2020  
6) Lr. No. Nil dt. 06/01/2021 from Principal, SJ CET submitting SoE and UC

#### ORDER

Vide Ref. 1, the maximum amount of Financial Support eligible for execution of the project proposal SRI-23/2018-19 on "Development of Proton Exchange Membrane Fuel Cell (PEMFC) Stack for Domestic Applications" received from Dr. Rajesh Baby, Associate Professor and Head of the Department, Department of Mechanical Engineering, St. Joseph's College of Engineering and Technology, Palai, Kottayam was calculated to be Rs. 463866/-. It was also decided to sanction an amount of Rs. 4,00,000/- (Rupees four lakhs only) as initial financial support for the project on condition that decision regarding balance amount would be taken after scrutiny according to the Guidelines of the programme. Total amount of Rs. 3,00,000/- (Rupees three lakhs only) was released in two instalments vide Ref. 2 & 3.

The Principal Investigator had reported completion of execution of the project vide Ref. 4. The Technical Advisory Committee (TAC) of ANERT during its 4<sup>th</sup> meeting held on 18/09/2020 considered this report alongwith the request for release of the balance amount. The Committee felt that the project was worth supporting and recommended release of balance portion of the financial support to the recipient organisation.

Vide Ref. 6, The Principal, SJ CET, Palai submitted the Statement of Expenditure (SoE) and Utilisation Certificate (UC). Based on these documents it has been decided to **release an amount of Rs. 1,58,680/- (Rupees one lakh fifty eight thousand six hundred and eighty**

only) in final settlement of account as detailed below:

A	Total Expenditure for the Project	Rs. 5,86,066/-
B	Share of the Recipient Institution	Rs. 1,48,680/-
C	Share of ANERT (A-B)	Rs. 4,37,386/-
D	Overhead (5% of C)	Rs. 21,869/-
E	Total eligible Financial Support from ANERT (C+D)	Rs. 4,59,255/-
F	First Instalment Released	Rs. 1,48,680/-
G	Second Instalment Released	Rs. 1,51,320/-
H	Amount accrued as interest	Rs. 575/-
I	Total at the disposal of the Recipient Institution (F+G+H)	Rs. 3,00,575/-
J	Balance Amount Payable (E-I)	Rs. 1,58,680/-

Sanction is also accorded for e-transfer of this amount to the bank account created for implementation and management of the project the details of which are given below:

**Details of Bank Account**

Customer Name : M/s ANERT 23 SJCET

Account No. : 0708053000006283

Bank : South Indian Bank

Branch : 0708 Choondacherry

IFSC Code : SIBL0000708

This expenditure is to be met from the provision in Item No. (v) 'Supporting R&D and Innovation' of II.1 'Technology development, demonstration, pilots, studies' under the Head of A/c I2810-00-800-90-35(8) of the Budget for Financial Year 2020-21.

  
Armit Meena I A S  
Director

Copy to:

- 1) The Principal, St. Joseph's College of Engineering and Technology, Choondacherry PO, Palai, Kottayam-686579
- 2) Dr. Rajesh Baby, Associate Professor and Head of the Department, Department of Mechanical Engineering, St. Joseph's College of Engineering and Technology, Choondacherry PO, Palai, Kottayam-686579

**APJ Abdul Kalam Technological University  
Thiruvananthapuram**

**PROCEEDINGS**

**APJAKTU – CERD** – Engineering Colleges - Financial Assistance to Students Project -Administrative  
Sanction – Accorded - Orders issued

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*RESEARCH SECTION*

PROCEEDINGS NO : KTU/RESEARCH Thiruvananthapuram, Dated: **03.12.2018**  
2/3895/2018

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*Read:-*

1. Minutes of the 1st meeting of Engineering Research Council dated 27.1.2010
2. Minutes of 2nd meeting of Executive Committee dated 21.10.2010
3. Minutes of the 2nd meeting of Research Council dated 29.2.2017
4. Proposals of Student Project for financial assistance
5. Screening Committee meeting held in November 2018 for evaluation of project proposals.

**ORDER**

By the minutes read 1<sup>st</sup> above, the Engineering Research Council had approved the scheme for Financial Assistance to Student Project for the Government Engineering College. By the minutes read 2<sup>nd</sup> above, it was decided to extend the financial assistance for the students project to the students of the Government aided and Government Controlled Engineering Colleges. By the minutes 3<sup>rd</sup> above, it was decided to extend the financial assistance to Students Project of all engineering colleges affiliated to KTU with NBA accreditation. It is also decided that the financial assistance will be provided as reimbursement of expenditure occurred for the sanctioned project.

The Screening Committee meetings held in November 2018 evaluated the project proposals forwarded from Engineering Colleges affiliated to KTU and recommended financial assistance to selected proposals as listed in Annexure 1.

Administrative sanction is therefore accorded for financial assistance to student project as detailed in Annexure I. The project shall be completed within a period of 1 year and the project should be completed with the students who presented the project before the Screening Committee.

The expenditure should be incurred as per the terms and conditions as per Annexure II. The amount will be reimbursed to the Principal of the concerned Colleges only after the successful completion of the project and on the production of certified bills & vouchers along with the audited utilization certificate, statement of expenditure and project completion report.

The expenditure may be met from the Head of Account

**“ S- 3- Research Activities-002-Innovative Student Project”.**

*Sd/-*

Dr. VRINDA V NAIR \*



DEAN (Research)

To

The Principals  
Engineering Colleges

\* This is a computer system (Digital File) generated letter. Hence there is no need for a physical signature.





**List of Student Projects selected for funding-October 2018**

Sl No	Name of Principal Investigator	Name of Student Investigators	College	Branch	Title of the Project.	Amount Sanctioned	Consumables	Equipments	Travel	Research Literature	Other	Contingency
1	Dr. Jayasree P K Professor Dr. Deepa Raj (Co-investigator)	Amalroy Thomas Fathima R Lekshmi A.S Parvathy A.S	CET	Civil	Biosolid bricks for a sustainable future.	44,000	8000	30000	2000		2000	2000
2	Dr. V R Jisha Associate Professor Ajith R R (Co-Investigator)	Aaron Xavier Amritha Rajeev Anoop K R Ganesh S	CET	EEE	Design of Biped Robot.	50,000	5500	38920			5000	580
3	Dr. J S Savier Professor Vaisakh J B (Co-Investigator)	Anjana Krishnan Anandhu Sasidharan Arjun Anilkumar Ajay Santhosh	CET	EEE	Mind controlled lift assist for paralysed people.	50,000	9000	36000	2000			3000
4	Dr. Maya Devi N Associate Professor Jaimon Cletus (Co-Investigator)	Swanoop A Soman Jishnu Surendran P Bidhun K	CET	EEE	Design and fabrication of a portable electronic component extractor for e-waste-mobile phones.	50,000	10000	30000	5000			5000
5	Deepa M U Assistant Professor	Aravind Sankar John Benny Fathima Sebastian Joseph	CET	EEE	Continuous life cycle evaluation of Li-Ion batteries used in hybrid vehicles.	25,200	6000	11500	3850			3850
6	Dr. Rajeev T Associate Professor	Arjun R Nair Blessen M C Edwin P J George Mathew	CET	EEE	Wireless charging of electric vehicles.	39,000	8000	25000	3000			-3000
7	Saina Deepthi Assistant Professor	Aishwarya Bose Blesson Justin J B Ganesh Sankar S Aravind S Narayan	CET	EEE	Robotic vehicle for the integral development of differently abled children.	32,500	5000	20000	2500			5000



8	P S Shenil Asso Prof	Nandhini K Princy M K Rekha T Revathi J	CET	EEE	Project on inductive wireless power transfer for electric vehicle.	22,000	6000	13000	1000		2000
9	Dr.N Asok Kumar Professor	Joseph Paul Mohammed Hashir Rohith Punnen Shameem N	CET	ME	Battery thermal management for electric vehicles.	50,000	10000	30000	5000		5000
10	Dr.Bajju B Associate Professor Prof.N.Sasi (Co-Investigator)	Rahul Jayaraj Alok M Antony Vishnu Chandran Vijay Das V S	CET	ME	Thermo-catalytic pyrolysis of WPC and OPC and thermal analysis of the products and improvement of efficiency, in a micro environment.	50,000	8000	35000	3500	1500	2000
11	Dr.Ajeesh Ramanujan Assistant Professor Vipin Vasu A V (Co-Investigator)	Rohith P Sarath Sreedhar Mohammed Shiraz A K Anashka Naina U	CET	CSE	Context identification for personal assisted guidance.	50,000	1000	39000	5000		5000
12	Linu Shine Assistant Professor	AkhilSanjaya Kumar Hariharan G Sanoj P	CET	ECE	FPGA Implementation of Chatbot using Deep-Neural Networks	23,500	4500	15000	500		3500
13	Joaquim Ignatious Monteiro Assistant Professor	Azeem K ArjunUdayabhhanu Luthfi Unnimoyin P.K	CET	ECE	Water quality monitoring using LoRa open-IoT system.	47,000	10000	25000	2000	5000	5000
14	Kiran R Assistant Professor	Amritha P Anoop R Krishnan Goutham Krishna B S	CET	ECE	Spatial mapping and autonomous navigation of a drone	34,000	5000	23000	3000		3000
15	Ebin M Manuel Assistant Professor	Don Dominic Yadu Krishnan	CET	ECE	Automobile usage profiler Integrated with Audio based Safety System using Deep Learning	45,000	5000	30000		5000	5000





16	Dr. Jiji Anna Varughese Assistant Professor Anu Thankappan (Co-Investigator)	Ananthan K Narayanan Bikhil P Sreejith R Visakh S	GEC Barton Hill	Civil	Development of compressive behaviour model for masonry	15,000	5000	4000	3000		3000	
17	Dr. Raji M Assistant Professor Kiran C. J Assistant Professor (Co-Investigator)	Abdullah Faizy S Ananthu Krishnan R.K Nayana Sam Shipa Mary Sam	GEC Bartonhill	Civil	Assesment of behaviour of bamboo as a truss memberr	37,000	8000	15000	5000	2000	2000	5000
18	Dr. Wilbert R Assistant Professor Prof. Divya Chandran (Co-Investigator)	Arya S Kannan Binusree K.S Sadiya S.N Sreelakshmi K.S	GEC Bartonhill	Civil	Flow simulation studies under varying reynolds number	33,000	1000	30000			1000	1000
19	Dr. Vinish V Nair Associate Professor	Akhil J P V Anju Anand U S Greeshma S Vijayan Sulthan Abdul Salam	RIT Kottayam	Civil	Desalination using modified solar still.	40,000	7000	20000	4000		4000	5000
20	Shibu Kumar K.B Assistant Professor	Ebey Abraham Akshatha Nayak Ashna Iqbal Krishna Madhu	RIT Kottayam	CSE	Gesture Sensing Gloves for Real- Time Translation of Indian Sign Language	31,000	6000	19000	3000			3000
21	Dr. Sobhana N V Professor	Abhishek Singh	RIT Kottayam	CSE	Automation of gate closing and anti collision system in Indian Railways	30,000	5000	19000	3000			3000
22	Dr. Nowshaja P. T Professor	Abdul Bari Akhil.K Anjima C.S Sobhin Raghavan	GEC Thrissur	Civil	A novel and cost effective method for characterization of Rheological behavior	50,000	10000	14100	5000	900	5000	15000
23	Dr. Subin Paulose Assistant Professor	Aishwarya P Nambiar Kiran A S Mohammed Unais C P Steve Roy	GEC Thrissur	Chemical	Preparation, stabilizat ion mechanical properties evaluation thermal analysis,	40,000	8000	15000	3000	2000		12000

24	Dr. Imthias Ahammed T P Professor Muhammed Ali	Don Kurian Irene Tenison Jerin Sam Rajan Rahul P Bharathan	TKM College of Engineering, Kollam	EEE	Autonomous car based on computer vision using Raspberry Pi.	35,000	6000	23000	2500	3500
25	Baiju R Naina Assistant Professor Muhammedali Shafeeque	Anita Maria Sunny Arjay J Mohammed Ali Sajid Nabeel Mohammed	TKM College of Engineering, Kollam	EEE	Low voltage Direct current supply for home appliances using Photovoltaic	33,000	5000	20000	3000	5000
26	Dr. Eison John Assistant Professor	John Kurian Veliyath Amrutha Sivan Liya Mary P L Leanda J Payyappilly	MACE Kothamangalam	Civil	Study on the effectiveness of shrinkage reducing admixtures on the properties of concrete with and without mineral admixtures	30,000		30000		
27	Dr. Balu E George Assistant Professor Eidhose M Manjummekudiyil (Co-Investigator)	Adhil P Anjana A Bini Raj B.G Damian J Wilson	MACE Kothamangalam	Civil	Slope subsidence; Evaluation of reasons and suggestion of rectification.	28,500	1000	23500	2000	2000
28	Dr. Bos Mathew Jos Professor Prof. Eidhose K A (Co-Investigator)	Deepak Rajan Sarath P Raju Vijith K C Vivek Babu Jacob	MACE Kothamangalam	EEE	Development of a Plug-in Series Hybrid Electric Vehicle with Range Extension	46,000	5000	35000	1000	5000
29	Dr. Suekha Mariam Varghese Professor Neethu Subash (Co-Investigator)	Mathews Joseph Abhinav T K Ashlay Cyriac	MACE Kothamangalam	CSE	Autonomous fruit pluckers.	50,000	2000	48000		
30	Biju Cherian Abraham Associate Professor Georgekutty S M (Co-Investigator)	Ann Joe Jose Ronald Benny Kiran S R Karthik Praseeth	MACE Kothamangalam	ME	Performance evaluation of animal fat biodiesel variable compression ratio engine	48,000	8000	30000	5000	5000





31	Dr. Aji Joy Associate Professor Prof. Jiss Paul (Co-Investigator)	Dinoy Johny Arya Saji Jees Paul Varghese R Prakash Rao	MACE Kothamangalam	ECE	Portable Equipment to Diagnose Haemafic Infection using Absorption Spectral Analysis	42,000	10000	25000			3000	4000
32	Athira Prasad Assistant Professor	Mathew Varghese Ameer Fayiz Kaithakath	MACE Kothamangalam	ECE	IoT & PLC based smart home system with PV inverter an blockchain based	39,000	6000	25000	2000	2000	2000	2000
33	Anila P V Assistant Professor Basil J Paul (Co-Investigator)	Athul R M Aswathi M P Kavya Raveendran Sreelakshmi S	MACE Kothamangalam	ECE	High Gain Antenna with Metamaterial Superstrate	35,000	10000	5000	5000	5000	5000	5000
34	Sreelakshmy Pillai G Assistant Professor Dr. Sudha V (Co-Investigator)	Ajay Prasad Akhila R Anishma M.S K Rakesh	NSS College of Engineering Palakkad	Civil	Manufacturing of bricks using flood deposited clay.	18,000	10000		2000	2000	2000	2000
35	Rejani V.U Assistant Professor Dr. A.K.Raji (Co-Investigator)	Rakhi Ramesh Reshma V P Sreeja C V Sruthilaya M	NSS College of Engineering Palakkad	Civil	Study on utilization of demolition waste and soil deposited due to flood in road construtor.	37,000	5000	25000	2000	1000	2000	2000
36	Dr. Vasanthi V Associate Professor	Harikrishnan E Lavanya V Haritha T R Greeshma	NSS College of Engineering Palakkad	EEE	Forecasting of Wheel Clogging by continuos Temperature monitoring in	28,000	4000	20000	2000			2000
37	Dr. Venugopal G Associate Professor Ratheep Raj (Co-Investigator)	Arathi R Deepika P Maya T	NSS College of Engineering Palakkad	ECE	Wireless intravenous bottle monitoring system for hospitals.	45,000	10000	25000	5000			5000
38	Dr. Jayamohan J. Professor Radhika P Nair (Co-Investigator)	Ardra Liju Fairiya.E.B Manasi A S Renu S	LBS Institute of Technology for Women, TVM	Civil	Behaviour of footings with non-rectangular cross section.	18,000	8000	5000				5000



39	Dancy Kurian Assistant Professor Syama S R (Co-Investigator)	Abhilas A S Abhinand N S Nikhil K R Parameswaran S	College of Engineering Attungal	CSE	Cashierless shopping model assisted with voice.	19,000	1000	12000	1000	2000	3000
40	Fathima Salim Assistant Professor Sunila S (Co-Investigator)	Jebin James Praveen Zacharia Aswathy R Pillai Bijith K M	College of Engineering Pathanapuram	EEEE	Microcontroller based gesture to voice conversion for deaf and dumb.	28,000	5000	20,000	1000	1000	1000
41	Abhasree S S Assistant Professor Anas S R (Co-Investigator)	Amalnath M Mahandh M Rahul H Muhammed Jazeeludeen	College of Engineering Pathanapuram	EEEE	Rubber seed extracts as an insulating oil for high voltage equipments.	26,000	5000	15000	3000		3000
42	Dr. Indu P Nair Associate Professor and HOD	Vishnu V Dev Aravind K R Susmith J J Vishnu P M	College of Engineering Kidangoor	EEE	Beta Wheelchair	27,500	5500	18000	1500		2500
43	Anith Krishnan Assistant Professor	Abhinand K A Anandhu Sathesh R Nandu Sanju Sam	College of Engineering Kidangoor	EEE	Electric Bike	33,000	5000	25000	1000		2000
44	Arun R Chandran Assistant Professor Muhammed Ameen (Co-Investigator)	ChristeenaStanly Divya Jayan Madhuri Madhu Shiji P Varghese	College of Engineering Kidangoor	ECE	Human Detection Origami Robot	28,000	8000	12000	4000		4000
45	Surjith S Assistant Professor Remya Elizabeth Philip (Co-Investigator)	Nihad E U Nithin B G	College of Engineering Perumon	ECE	360degree smart Helmet	39,000	5000	25000	2000	2000	5000
46	Philip Cherian Associate Professor Varsha P S (Co-Investigator)	Sreejith K Induja.S Pavithra Nath	College of Engineering Chengannur	ECE	MINDZO:A Brain Controlled Wheelchair	20,000	10000	5000	2500		2500



47	Manoj Ray D Associate Professor Remya R S (Co-Investigator)	Abdul Jaleel K P Abhijith S Ambujakshan Nair Akhildev C S	College of Engineering Karunagappally	CSE	Smart electronic voting machine with UID and biometric security.	30,000	5000	20000	4000	5000	5000
48	Dr. Jessy John Professor & Head of Department	Amrutha S Kumar Anjali Murali N.Madhurima N.Rajalakshmi	Model Engineering College	ECE	Acquisition and Processing of Vibroarthrographic signals to study gender and age dependent differences and to classify normal and abnormal signals.	33,000	3000	25000	4000	1000	1000
49	Minimol B Associate Professor	Bilu Soman Mohamed Dhanish Nanditha Sabu Vinay Jose Baby	Model Engineering College	ECE	Portable device for Pain intensity detection using Bio- signal monitoring	44,000	10000	25000	4000	5000	5000
50	Anju Rose Tom Assistant Professor Sruthi S (Co-Investigator)	Akshaya L K Albin Cyriac Joy Amal Raju Nithya K John	Model Engineering College	ECE	Detection Disordered Breathing and Limb Movement Using In- Bed Force Sensors and Shore Pattern	37,000	5000	25000	3500	3500	3500
51	Dr. Bharati Raj Associate Professor	Abhirami A Kumar Aiswarya J B Anakha M Nair Benita P J	Marian Engineering College, TVM	Civil	Use of flex fibre in self compacting concrete.	19,000	5000	14,000			
52	P.Muthulakshmi Assistant Professor Dr.M.Satyakumar Prof & HOD (Co-Investigator)	R.Ananth Krishnan Joelene Godwin Gopika Thampi Amal Babu	Mar Baselios College of Engineering and Technology, Trivandrum	Civil	Product design and fabrication of perforated interlocking concrete paver blocks (PICB) with waste material incorporation for ground water recharging and	22,500	5000	13500	2000	2000	2000



53	Diya N A Assistant Professor Sandhya P (Co-Investigator)	Sujith Sumanam Lekshmi S Nair Reenu Mary R. Devu T S	Mar Baselios College of Engineering and Technology TVM	EEEE	IoT enabled Solar Street lighting System	43,300	10000	24800	1500	4000	3000
54	Dr. Usha K M Prof & HOD Shijina S S Assistant Professor (Co-Investigator)	Akhila Krishnan C. Shilpa K Nayana Shilpa Raj S	Mohandas College of Engg & Technology	Chemical	Design of a water disinfection system using silver and copper nanoparticles impregnated coconut shell waste carbon	26,000	8000	10000	3000		5000
55	M V Varkey Assistant Professor Dr. Mini Mathew (Co-Investigator)	Rohit Das Merin Mariam Thomas Megha Mohan Sheha Raju	Amal Jyothi College of Engineering Kottayam	Civil	SANI-RAIL (Sanitation in railways)	22,000	5000	15,000			2000
56	Rani Chacko Assistant Professor Rohith Rajan Eapen (Co-Investigator)	Saira Philip Liss Abraham Maret Anju Joseph	Amal Jyothi College of Engineering Kottayam	EEEE	Advanced DSM System for DC	35,000	5000	22500	3000		4500
57	Jithin Kurian Andrews Assistant Professor Dr. Reebu Z Koshy (Co-Investigator)	Alen Mathew Amal Chandra Aly Ann Joseph Anagha V	Saintgits College of Engineering, Kottayam	Civil	Automated Pothole Sealer	25,000	5000	15,000	2000		3000
58	Ria Mathews Assistant Professor Nithin Prince John (Co-Investigator)	Jilu D Kumar Jinson Joseph Jeffin Thomas Jithu K Mathew Antony	Saintgits College of Engineering, Kottayam	CSE	Intelligent speech impairment aid.	7,000	2000	3000	1000		1000
59	Vinay Mathew John Assistant Professor Harinarayanan Nampoothiri M G (Co-Investigator)	Jacob George Harish M	Saintgits College of Engineering Kottayam	IME	Safe drive tech	36,286	1200	27586	2500		5000



60	Mathews Joseph Associate Professor George John (Co-Investigator)	Sanju Joshi Parampil Sam Kurian Chacko Shamil Koshy Varghese Vinit Jose	Saintgits College of Engineering Kottayam	ME	Agro-pot transplanting machine.	50,000	10000	30000	5000	5000
61	Bobby P Paul Assistant Professor	Martin Paul Nithin V Edassery Pratish Rajan Sandra Maria John	Saintgits College of Engineering Kottayam	ME	Design and development of intelligent touch screen joystick for controlling electric wheelchair	49,500	9900	29750	4900	4950
62	Beena A O Assistant Professor Roshniommen (Co-Investigator)	Riya Thomas Maria Rose James	Saintgits College of Engineering	ECE	Smart Braille Printer	22,000	10000	8000	2000	2000
63	Dr. Ansal K A Associate Professor Dr. RiboyCherian (Co-Investigator)	Roshini K Rajan Mithu Mariam Cherian Reshma V R Dana Mariam Jacob	Saintgits College of Engineering	ECE	Minimization of radiation effects of mobile antennas by EBG structures	32,500	10000	12500	5000	5000
64	Dr. Lijo Paul Associate Professor	Vimal John Tony K R Tom Marlin	St. Joseph's College of Engineering and Technology, Pala, Kottayam	ME	3D printer filaments from waste plastics.	50,000	10000	30000	5000	5000
65	Ajith S Assistant Professor Biju Abraham Narayamparambil (Co-Investigator)	Aisal K A Alvin Chris Antony Ansu Babu Catherine Babu	Rajagiri School of Engineering and Technology, Ernakulam	CSE	Smart tic-tac-toe board for rehabilitation.	11,500	3000	6500		2000
66	Hari. C. V Assistant Professor Aparna George (Co-Investigator)	Aakash U R Clint K Varghese Rithvick Abraham Rajesh Sudeeptha M S	Rajagiri School of Engg. & Technology	ECE	Space Efficient Automated Packaging System(SEAPS)	30,500	9000	12500	4500	4500
67	AnilaKuriakose Assistant Professor Harsha Appukkuttan (Co-Investigator)	Rejasree R Menon. Sultana Najeeb Swetha N Prabhu Tresa Angel George	Rajagiri School of Engg. & Technology	ECE	Antenna Design for UWB through the Wall Radar Imaging	20,000	10000		5000	5000



68	Sreela Sreedhar Associate Professor Abin Comen Philip (Co-Investigator)	Harikrishnan Vijayan Roshan Josey Sankar P G Sreehari N P	TOC H Institute of Science and Technology, Arakk unnam	CSE	Cooperative vehicle platooning using machine learning and computer vision.	20,000	5000	12000	5000	3000
69	Dr. Georgina Binoy Joseph Associate Professor Dr. Deepa Elizabeth George (Co-Investigator)	Naveen M SachithanandaPai V.G Saurav B Sreehari Jayaraj	TOC H Institute of Science & Technology	ECE	Portable Malaria Rapid Diagnostic Device(PMRDD)	32,500	10000	12500	5000	5000
70	Albins Paul Assistant Professor Ajay Kumar (Co-Investigator)	Harikrishnan S Joseph George Jwala S Sandeep	AdiShankara Institute of Engineering and Technology Kalady.	ECE	HAUY-A Braille Assist	26,500	8000	12500	2000	4000
71	Neema M Assistant Professor Dr. K Venugopal (Co-Investigator)	Krishna Prasad Sajith P S Lakshmi Madhu Priya P N	AdiShankara Institute of Engineering and Technology Kalady.	ECE	Multiple Eye Diseases Detection using Deep Convolutional Neural Network	23,900	1400	12500	5000	5000
72	Riya Joy Assistant Professor	Arundathi Das Arya E Athul K Ashfaq K T	Vimal Jyothi Engineering College Kannur	EEEE	Power generation in highway using fast moving vehicle	41,000	5000	30000	1000	5000
73	Lince Thomas Assistant Professor-	Vaishakh.P Vedha Hementh Jishnu T Amal M.V	Vimal Jyothi Engineering College, Kannur	IME	Off-Sunshine and Night Cooking Solar Cooker with Latent Heat Storage System.	50,000	15000	30000	2500	2500
74	Jerrin Yomas Associate Professor Lakshmy S (Co-Investigator)	Adarsh S Kumar Bhavana Rajeev Namitha Teresa Jose Nived Rajeev	Vimal Jyothi Engineering College, Kannur	ECE	Assistive wearables for disabled people using Dopler radar.	18,640	3040	12500	1550	1550



## Annexure II

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**Centre for Engineering Research and Development**  
**Terms & Conditions for Financial Assistance to Student Projects**

1. The amount has to be utilized as per budget provision under each head.
2. The purchase of equipments shall be in accordance with the store purchase rules. All equipment purchased will be the property of CERD and the stock entry of the items purchased shall be maintained in the College. Purchase of computers/peripherals is not allowed unless specifically mentioned in the sanction order.
3. The stock entries of consumables purchased shall also be done in the consumables stock register of College. Purchase of stationery shall be for project purpose only. Printing charges for multiple copies of the project report will not be admissible.
4. The maximum duration of the project is one year from the date of sanction. It is the discretion of the University to settle amount towards the purchase of those items not clearly mentioned, if any, in the project proposal.
5. On completion of the project, detailed report of the research work, audited statement of accounts and Utilization Certificate in the prescribed format duly attested by the head of the institution shall be submitted within one month of completion of the project for reimbursement of expenditure. Requests for reimbursement shall not be considered after the date of submission of documents as above.
6. On all publications resulting from the finding of the research/project of CERD, due acknowledgement shall be given to CERD under KTU.
7. Book or literature purchased, if any, should be taken into the Stock Register of Central Library or Department library and then distributed to the investigators.
8. The expenditure under the head Others is admissible as per the budget proposed. All other expenditure has to be included in the head Contingencies.

Title of Project:

Signature of Principal Investigator:

Name :

Office address:



### Utilization Certificate

Certified that out of ₹ 50,000 sanctioned by Centre for Engineering Research & Development (CERD)- Student fund towards financial assistance for the student project titled "3D printer filament from waste plastics", (File No. Order.No.KTU/RESEARCH2/3895/2018), an amount of ₹ 58,458 was utilized for the purpose for which it was sanctioned leaving a balance of ₹ 0 at the close of 15 June 2019.

*LPal*  
21/6/19  
Dr. Lijo Paul

Name and signature of  
Principal Investigator

*J. George*

Name and signature of  
Finance Officer

*Dr. Madhukumar*

Name and signature of  
Head of the Institution

PRINCIPAL  
ST. JOSEPH'S COLLEGE OF  
ENGG. & TECHNOLOGY, PALAI

