

Report on **KAIZEN 2K21**



Department of
Instrumentation and Control Engineering

L. D. College of Engineering
Ahmedabad

Date : 19th April, 2021

Platform: MS Team

VISION OF THE DEPARTMENT

To provide quality education and research environment for preparing competent Instrumentation and Control engineers to meet the technological challenges of industries and the society.

MISSION OF THE DEPARTMENT

- ❖ To impart quality education in the field of industrial automation to match the needs of industries.
- ❖ To encourage multi disciplinary research and innovative projects.
- ❖ To cultivate technocrats and entrepreneurs with professional skills and ethics.

PROGRAM EDUCATIONAL OBJECTIVES

- ❖ Graduate will be capable to design, develop, operate and maintain automation systems.
- ❖ Graduate will be competent to provide solutions in the field of Instrumentation and Control engineering that is technically feasible, economically viable and socially relevant.
- ❖ Graduate will exhibit effective communication, professional and ethical code of conduct, team work, leadership skill and lifelong learning.

PROGRAM OBJECTIVES

Engineering Graduates will be able to:

1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOME

PSO1-Ability to apply relevant concepts of sensors, actuators, signal conditioning, micro-controllers and control systems for design and maintenance of instruments which serve for industrial, societal and environmental needs.

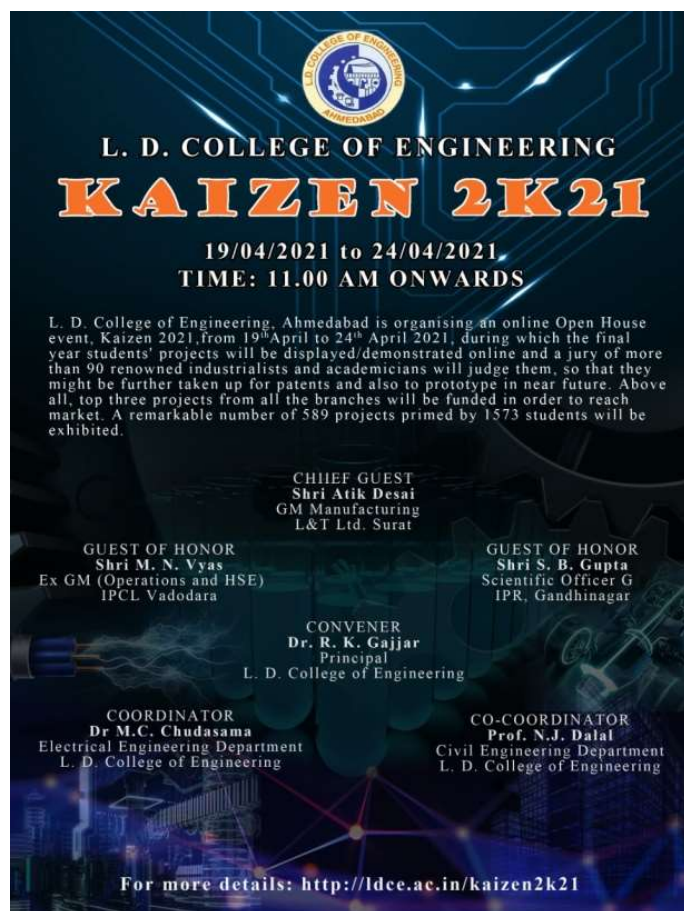
PSO2- Ability to use the knowledge of Process Instrumentation, PLC, SCADA and DCS for monitoring and control of industrial processes.

COURSE OUTCOME

PROJECT- II

1	Apply integrating skills, software and hardware to develop prototypes
2	Interpret data from prototype which leads to valuable conclusion / solution of project definition
3	Demonstrate prototype to professionals and incorporate feedback in the final project model
4	Prepare technical documentation and explore the opportunities for publications as well presentation
5	Utilise knowledge and acquire skills like collaborations, communication and independent learning for betterment of mankind

1. Brief Description of the event:



It is the tradition of Department of Instrumentation and control Engineering, L. D. College of Engineering-Ahmedabad to organize the Project Exhibition of final year UG and PG students every year under the title “KAIZEN-Continuous improvement”. The purpose of KAIZEN 2021 is to review, mentor and improve the project work done by the students so far. The review will be based on understanding of fundamental concept, team work, prototype development, innovations in the project and presentation skills.

The online Project Exhibition - Kaizen 2021 was inaugurated by Principal madam Dr. R. K. Gajjar along with chief guest Shri Atik Desai GM, manufacturing , L&T Surat, guest of Honour shri M. N. Vyas, Ex GM Operation and HSE – IPCL Vadodra and Dr. S. B. Gupta, Scientific Officer-G, IPR

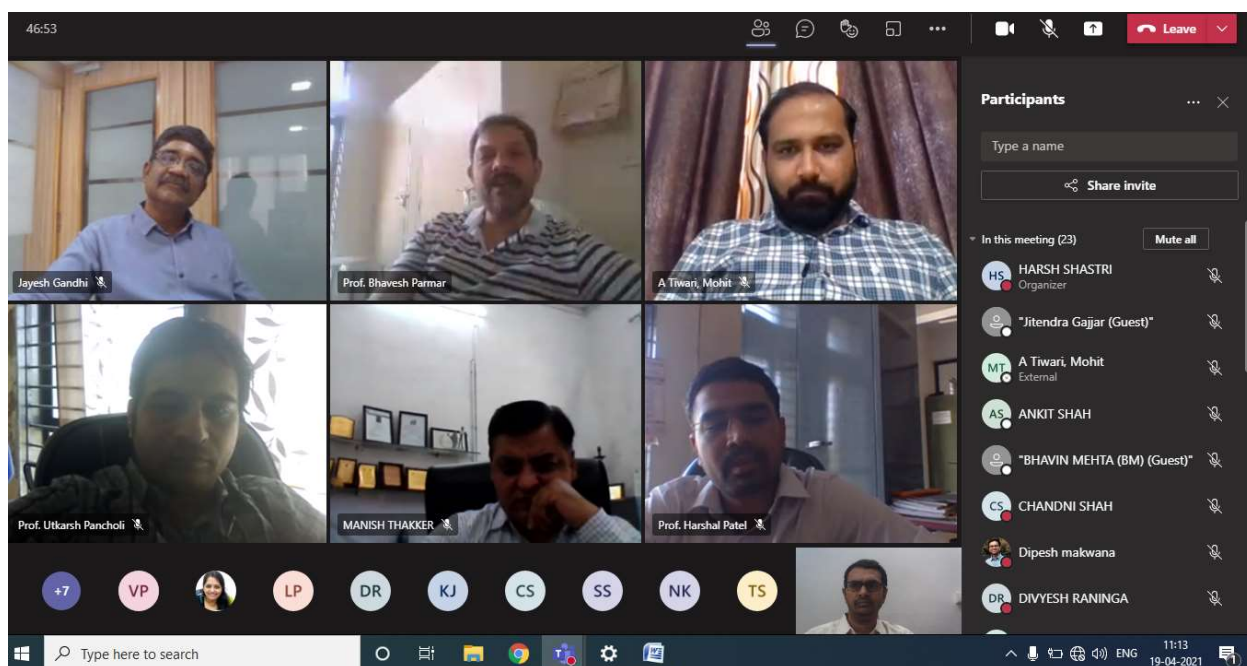
Gandhinagar on 19/04/2021, 10.00 am onwards. Through Link: [https:// meet.google.com/cyu-skss-mop](https://meet.google.com/cyu-skss-mop) All the experts of various sessions across all departments are heartily welcomed in the inauguration session.

After innutrition session HOD IC Prof. (Dr.) Manish Thakker welcomes all experts and Jury members and had a formal introduction with all staff of department. For the review of PG and UG final year students work three experts was called from field of academia, research and industry.

Experts cum jury members for events are

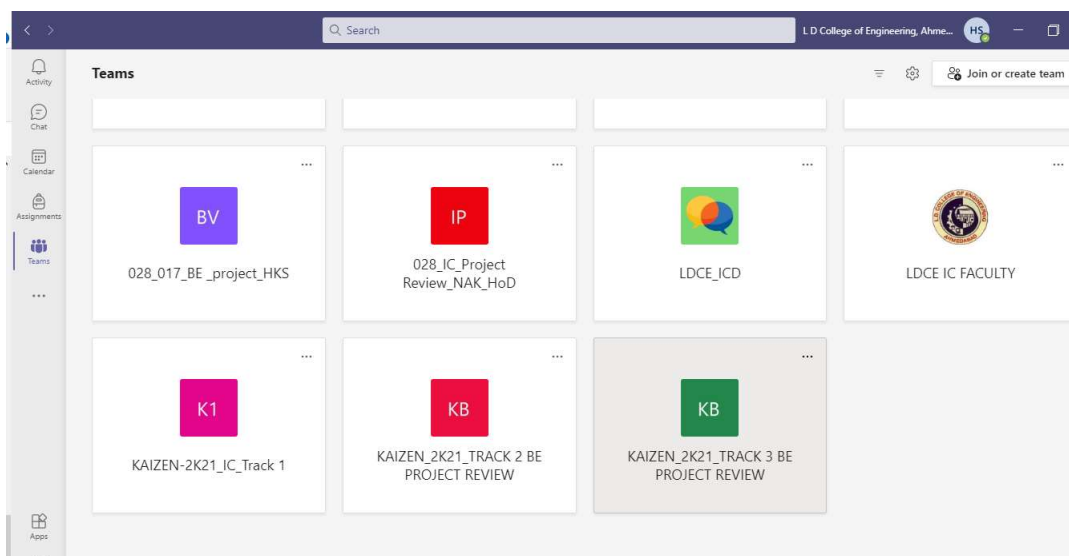
1. Dr. C. B. Bhatt (Principal MCA college- Maninagar)
2. Dr. Suryakant Gupta (Scientific Officer –G, FCIPT Gandinar)

3. Mr. Jitendra Gajjar(Director Amee Power)



2. Event Flow

The online Kaizen 2K21 for Instrumentation & Control Engineering Department was come about with 3 parallel online track,so all students and Experts can have enough time to discuss about the work of students.



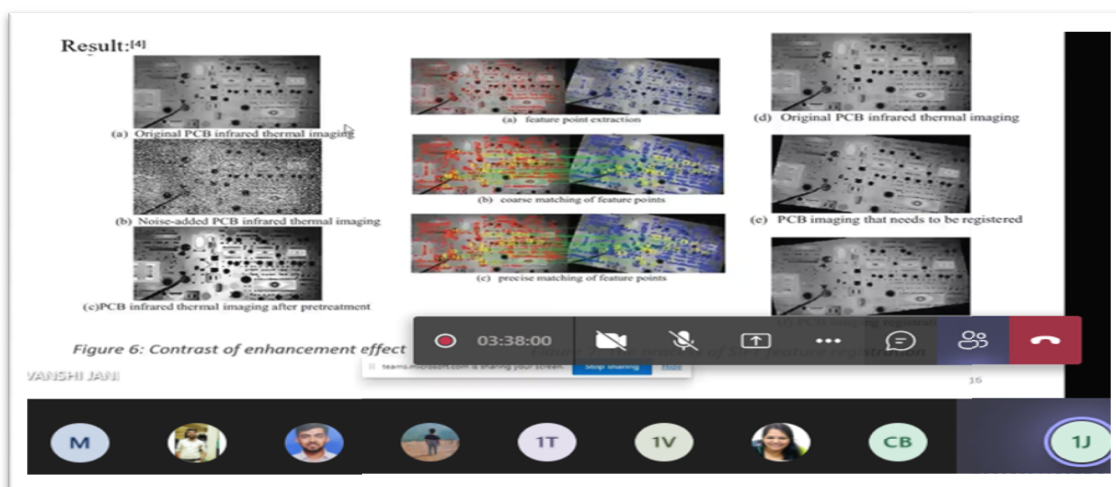
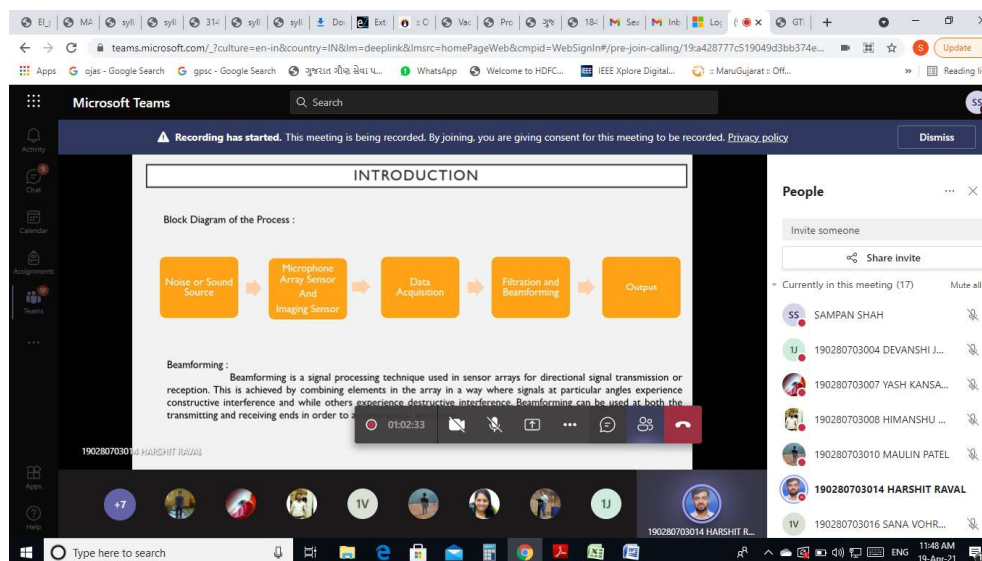
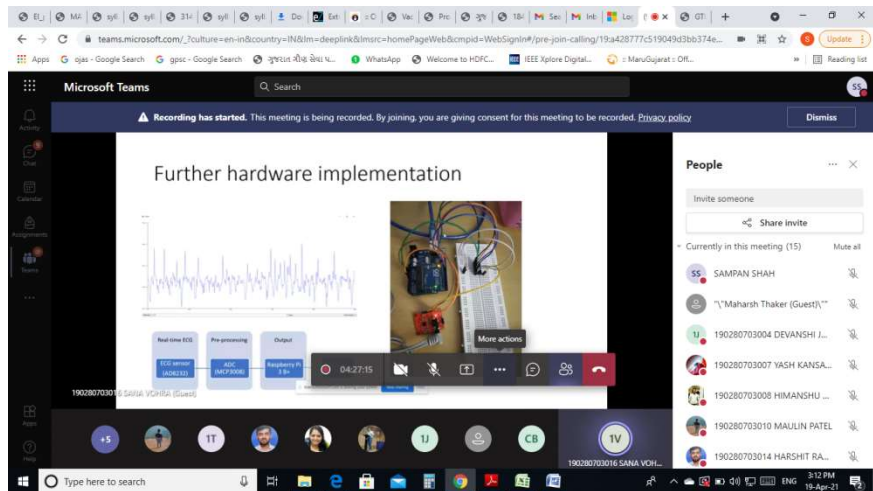
TRACK 1- ME DISSERTATION REVIEW

Review committee

Expert	Department faculty	Department faculty
Dr. C. B. Bhatt (Principal MCA college- Maninagar)	Prof. V. P. Patel	Prof. M. C. Patel

Sr. No	Time	Student Name	Project Title	Internal Guide
1	11.00	Harshit Raval	Sound Characterization and its Application in Fault Identification	Prof.M.T.Thakkar
2	11.15	Himanshu Parmar	Design Of Hybrid PID Plus Fuzzy Control For Inner Loop And Outer Loop Control Of DC Motor “	Prof.T.V.Shah
3	11.30	Yash Kansagara	Integrated Framework For Data Driving Process Monitoring and Diagnosis System Using Machine Learning and Cloud Computing	Prof.V.P.Patel
4	11.45	Maulin Patel	Identification of Human Emotions By Facial Expression using Artifical Intelligence Techniques	Prof.M.C.Patel
5	12.00	Maharsh Thaker	Application Development of Auto Tunner For PID Controller Tuning With Machine Learning And Optimization Techniques On Remote Server Using Cloud Computing “	Prof.V.P.Patel
6	12.15	Shersiya Trupti	Performance Evolution Of Motion Blood Image Restoration and Algorithm on Embedded Platform	Prof.T.V.Shah
7	12.30	Devanshi Jani	Automatic PCB Defect Detection using Image Processing On Embedded Platform “	Prof.D.H.Makwana
8	12.45	Palak Patel	Application Of Deep Learning in Respiratory Diseases Diagnosis “	Prof.M.T.Thakkar
9	13.00	Sana Vohra	Artificial Neural Network Based ECG Analysis For Arrhythmia Detection “	Prof.V.V.Patel

GLIMPS OF TRACK 1



TRACK -2 BE PROJECT REVIEW

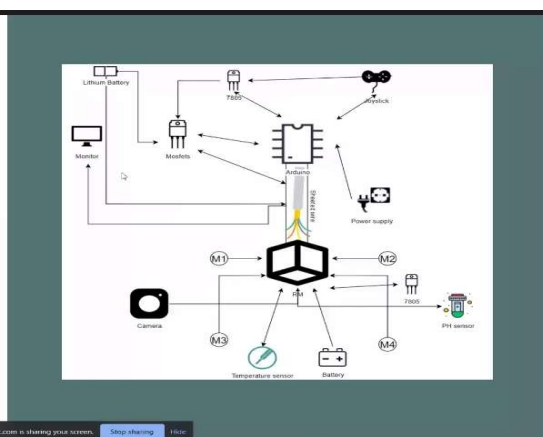
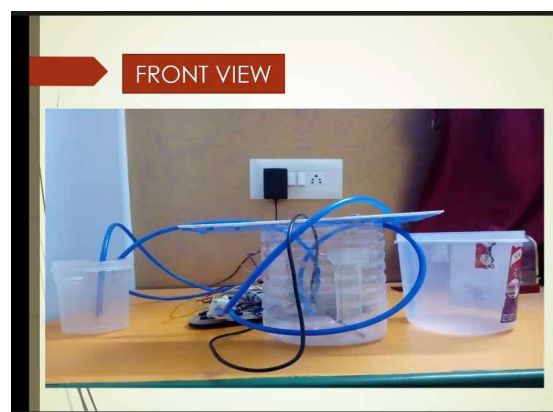
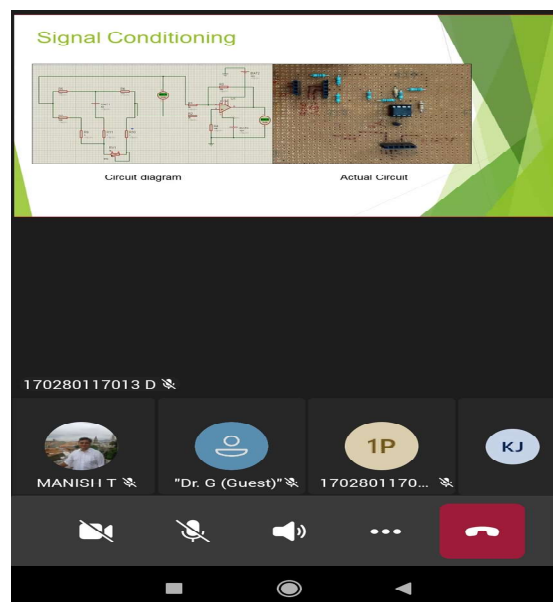
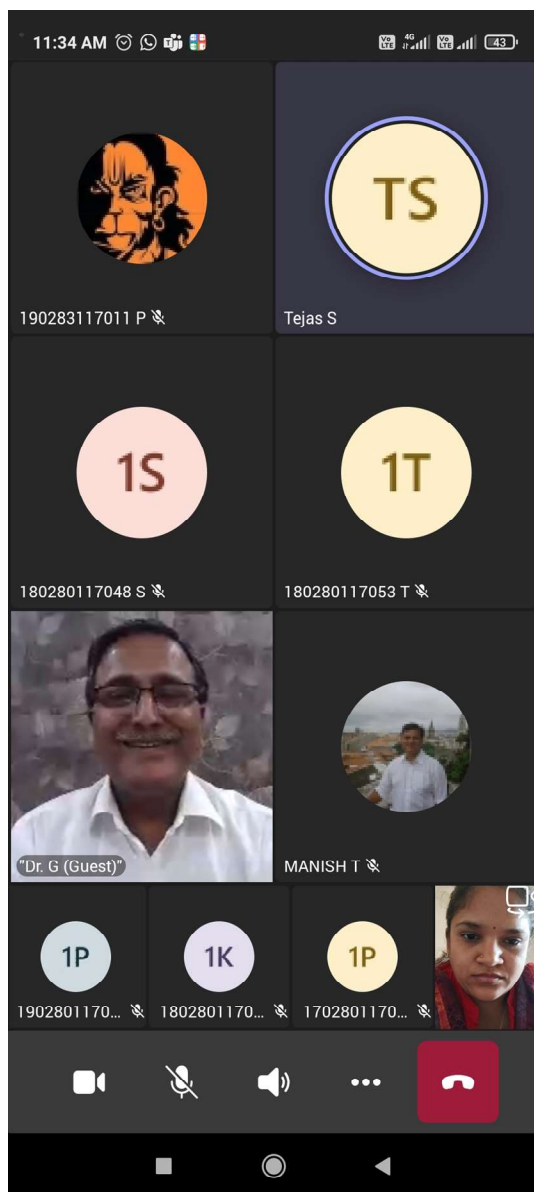
Review committee

Industrial Experts	Department faculty	Department faculty
Dr. Suryakant Gupta (FCIPT Gandinar)	Dr. T. V. Shah	Prof. V. V. Patel

Sr. No	Team Leader Enrollment No	Time	Team Leader	Team Members	Project Title	Internal Guide
1	170280117050	11.00	Shah Jinay Kiritkumar	Mistry Jay Mukeshbhai , Thakor Suresh Maheshbhai	Robotics and Automation	Mr. Divyesh V Raninga
2	170280117056	11.15	Surti Darshan Kalpeshbhai	Vyas Dhaval Bhikhubhai , Dalmia Yash Sandeep	Data Acquisition And Processing	Mr. Divyesh V Raninga
3	170280117043	11.30	Prajapati Khushali Sureshbhai	Gondaliya Pinal Bharatbhai	Advanced footsteps power generation using Microcontroller	Miss.SUHAGIYA URMILA GHANSHYAMBHAI
4	170280117003	11.45	Bharmal Burhanuddin Fakrudin	Patel Mayank Dineshbhai , Dudhat Vatsal Mukeshbhai , Patel Harsh Umeshbhai	Robust PID Control Of Single Tank System	Dr.SHAH ANKIT KIRITKUMAR
5	180283117007	12.00	Oza Vishesh Ketankumar	Parekh Zarana Chetanbhai	ADVANCED DATA LOGGER WITH SOLAR PANEL CLEANING SYSTEM.	HOD_028_17
6	170280117032	12.15	Parmar Rony Sandipsinh	Kukadiya Ronakkumar Balvantbhai , Desai	voice controlled forklift	Mr. LALIT SOMJIBHAI PATEL

				Nikhilkumar Satishbhai		
7	170280117051	12.30	Shah Tanaybhai Kamleshbhai	Tejwani Rohan Tulsidas , Varu Sanjay Arvindbhai	Advance process control system	Dr.SHAH ANKIT KIRITKUMAR
8	180283117006	12.45	Manani Payal Vijaybhai	Manani Parthvi Vijaybhai	Liquid mixing and bottle filling using PLC with SCADA	Ms.JOSHI KRUTI RASESHBHAI
9	170280117049	13.00	Senjaliya Janesh Dhirubhai	Parmar Nikunj Rajeshbhai , Patel Maulik Pankajbhai , Chaudhary Jay Jaskanbhai	Plastic detection and separation	Miss.Patel Vandana Vinodrai
10	170280117012	13.15	Devani Pragnesh Dineshbhai	Balar Ashish Jinabhai , Sangani Abhi Bharatbhai	SMART GREEN HOUSE OVER IOT PLATFORM	Miss.Patel Vandana Vinodrai
11	170280117054	13.30	Sonara Ravikumar Mukeshkumar	Payak Ibrahim Hanif Husen , Bhatt Ashutosh Jagdipkumar	Iot based automation	Mrs.PATEL MANISHA CHANDUBHAI

GLIMPS OF TRACK 2



TRACK -3 BE PROJECT REVIEW

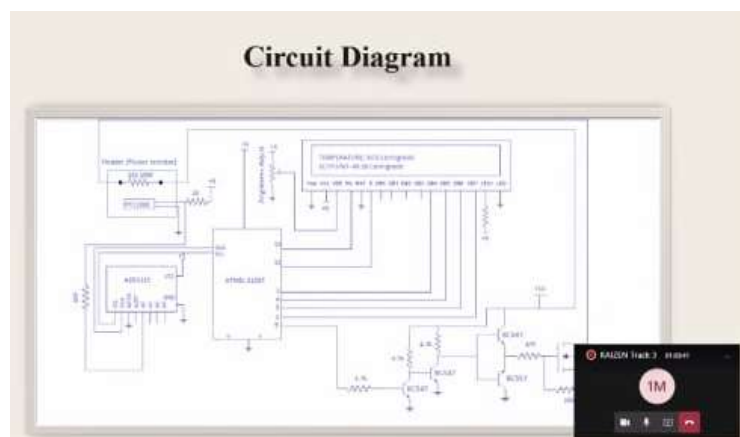
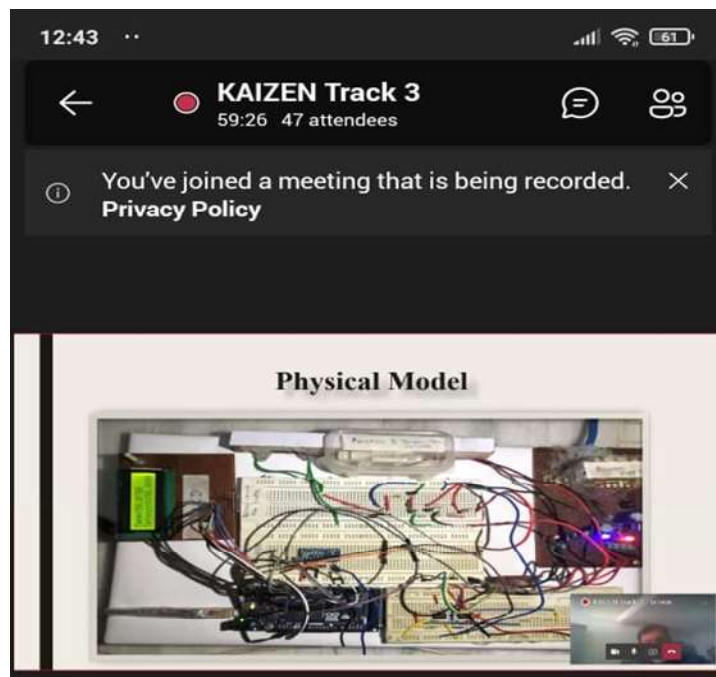
Review committee

Industrial Experts	Department faculty	Department faculty
Mr. Jitendra Gajjar (Ame Power)	Dr. D. H. Makwana	Dr. A. K. Shah

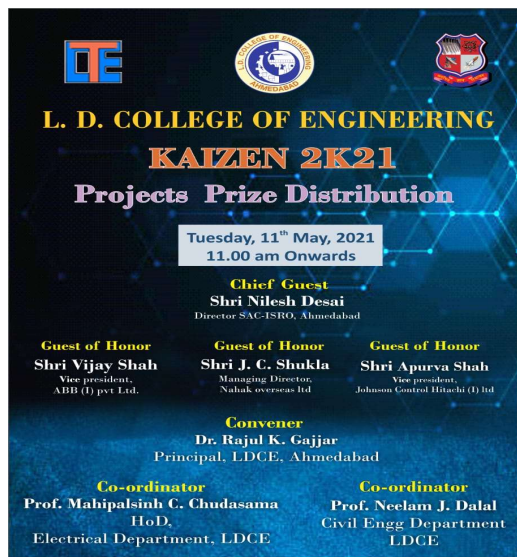
Sr · No	Team Leader En. No	Time	Team Leader	Team Members	Project Title	Internal Guide
1	170280117060	11.00	Vegad Ajay Bharatbhai	Khatri Mayankkumar Kishorbhai , Patni Shivam Arunkumar , Dey Sarkar Aninda Ashutosh	Machine Monitoring System	Ms.SHAH CHANDNI VIJAYKUMAR
2	180283117004	11.15	Makwana Mitesh Prabhudasbhai	Parmar Bharatbhai Chhaganbhai	Automatic Industrial Parameters Control By Using PLC With Bluetooth Device	Mr. Harsh Kamleshkumar Shastri
3	160280117004	11.30	Bhabhor Jaydeep Dilipkumar	Patel Dhruvesh , Sapariya Saurav Rajeshbhai , Patel Hardikkumar Ketankumar , Rathod Pragnesh	SMART WATER PARAMETERS MONITORING SYSTEM	Ms.SHAH CHANDNI VIJAYKUMAR
4	180283117002	11.45	Choudhary Sunny Motilal	Patel Hardik Pramodbhai , Purohit Jayesh Daxeshkumar , Tank Jagdish Gunvantray	Object Distribution	Mr. Harsh Kamleshkumar Shastri
5	17028011702	12.0	Lakkad Nilay	Mulani Maulik	MULTI	Mr.Patel Vinod P

	2	0	Bharatkumar	Hareshbhai , Parmar Jhanavi Jitendrabhai	CHANNEL TEMPERATUR E MEASUREMEN T AND CONTROL USING PID CONTROL	
6	15028011705 6	12.1 5	TADAVI HITESHKUMA R KHUSHALBH AI	TADAVI HITESHKUMA R KHUSHALBH AI	Development of a Programmable Logic Controller Using Arduino Controller and MATLAB Simulink	Mr.SHAH SAMPAN NANDKISHORBH AI
7	17028011700 7	12.3 0	Chondagar Dishant Nalinkumar	Kanjariya Sagar Natvarlal , Kaila Arpit Bharatbhai , Vinchhi Hetaben Kalpeshkumar	IoT based smart parking system	Mr.SHAH SAMPAN NANDKISHORBH AI
8	17028011702 8	12.4 5	Parekh Jinal Jiten	Patel Jaykumar Chandubhai , Rajwadi Yash Chandrakant	Peltier Air Cooler	Miss.Kanani Nidhi Ashokkumar
9	17028011702 7	13.0 0	Panchal Shalin Vishnulal	Dubal Janvi Jigneshkumar , Singh Shaifali Pramod Kumar , Sorathiya Mansi Pareshkumar	Portable Density meter with temperature and humidity sensor	Mr. LALIT SOMJIBHAI PATEL
10	17028011704 6	13.1 5	Rathor Hariom Vijaykishor	Odedara Parth Nebhabhai , Hadiya Hasmukh Dhirubhai	ATM SECURITY SYSTEM	Mr.SHAH SAMPAN NANDKISHORBH AI

GLIMPS OF TRACK 3



3. Result of event



Total 21 UG Projects and 9 PG dissertations were reviewed in this event from which 3 best UG and 1 best PG project was identified. Winners were given certificate along with cash Prizes of 3000, 2000 and 1500 to each team

Price distribution and E- certificates event was held on 11th may 2021

In this event was enlightened by chief guest Mr. Nilesh Desai , Director of SAC- ISRO Ahmedabad, along with Mr Vijay Shah, VP, ABB (I) Pvt. Ltd, Mr. J. C. Shukla, MD, Nahak Overseas Ltd. And Mr. Apurva Shah, VP, Johnson controls Hitachi (I) Ltd.

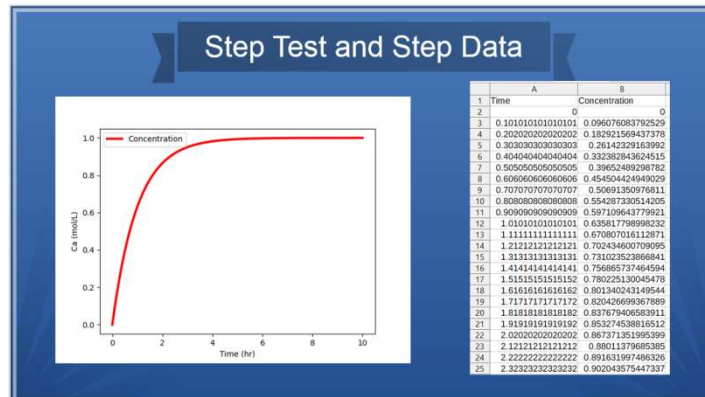
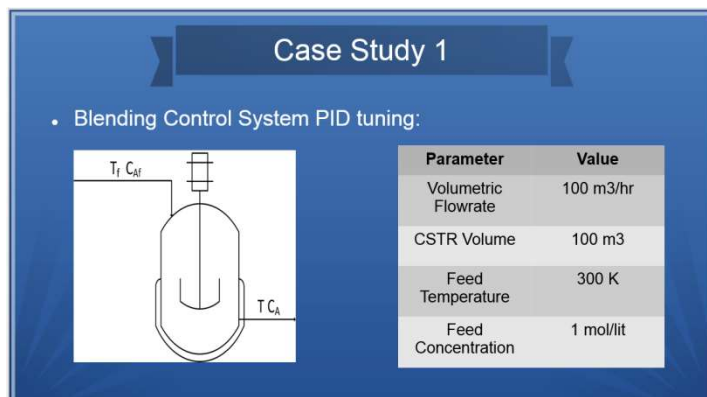


Based on the experts panel's decision in the PG track **Maharsh Thaker's work "Application Development of Auto Tunner For PID Controller Tuning With Machine Learning And Optimization Techniques On Remote Server Using Cloud Computing"** guided by Prof. V.P.Patel was selected.



Abstract : The dissertation project work is based on creating an Auto-Tuning application using web development for PID controller to tune the PID parameters using optimization techniques. Auto-Tuning application contains simulation model of a plant, which is developed using Python programming language. Parameters of PID are autotuned according to the setpoint received by the system from the user. This simulation of plant model can be implemented in cloud service. User can operate the simulation in the remote server using cloud services. Cloud Computing has emerged as new paradigm of Automation technology and has many advantages like cost reduction for system developers and users.

From the UG projects best 3 projects were ranked as below



Rank 1

Robotics and Automation by Shah Jinay Kiritkumar, Mistry Jay Mukeshbhai and Thakor Suresh Maheshbhai under guidance of Prof . D V Raninga



Abstract:

The present invention relates to a remotely operated vehicle (ROV) named as Underwater Inspection Vehicle-1.0 which inspects water tanks, Industrial fluid tanks, ship hulls, submerged parts of bridges, dams etc. Speed of UIV-1.0 can be controlled underwater for the inspection and data acquisition purpose. UIV-1.0 helps to reach places underwater where humans cannot reach or are dangerous for humans

Rank 2

Plastic detection and separation by Senjaliya Janesh Dhirubhai, Parmar Nikunj Rajeshbhai , Patel Maulik Pankajbhai and Chaudhary Jay Jaskanbhai under guidance of Prof. V. V. Patel



Abstract

This project is related about save environment from plastic. In which system does plastic detection and separation program which is first detect the plastic types from 7 types of plastic using image processing and after that separate this plastic in 7 types. so it can recycled it perfectly and overcome the damped garbage area.

Rank 3

Portable Density meter with temperature and humidity sensor by Panchal Shalin Vishnual, Dubal Janvi Jigneshkumar, Singh Shaifali Pramod Kumar and Sorathiya Mansi Pareshkumar
Under guidance of Prof. L. S. Patel



Abstract

In most chemical, pharmaceutical and plastic plants and industries density measurement plays vital role in monitoring and controlling process parameters and our prototype is meant for that only. Our prototype is special one as it measures both solid & liquid densities in a single unified device. The market price of these existing products are quite costly but we come up with a very economical price tag. And we are concerned about the portability of the product so we make it small and easily portable one. In order to make it economical we used a transducer (HX711), load cell sensor, Arduino and some other low-cost equipments.

4. Feedback from the Experts

Dear Sir,

Thanks for your mail intimation with detailed analysis.

As you are well aware, our approach and understanding will be different, towards the student projects.

we can guide for the better Industrial approach, wide applications and pro's & con's of the system designing.

Once again, thanks for giving us a chance to associate with you.

Thanks & Regards.

J. B. Gajjar. Mobile: 099099 70707.

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Your Reliable Partner For Industrial Automation.

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BEHIND HDFC BANK, PLOT NO: 20/2, PHASE – 01,
GIDC INDUSTRIAL ESTATE,
VATVA, AHMEDABAD. 382 445.

Email: ameepower@ameepower.com

5. Feedback from the faculty

Nice coordination

Expert suggestions for improvement for all

Efficient organisation by Prof. H. K. Shashtri

Projects

everything especially ME track 1

Which projects interest you the most?

5 responses

Density measurr

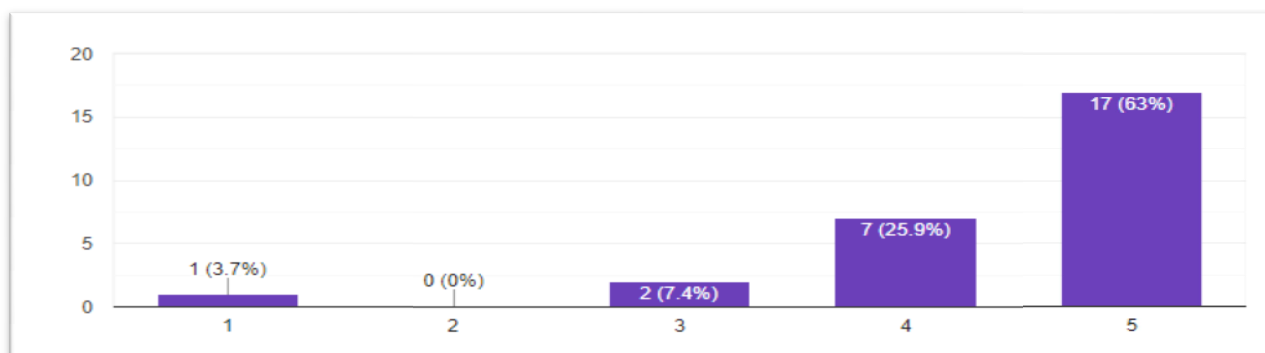
Robust PID control of single tank system

Solid waste management, Robot and IOT applications

Covid related

6. Feedback from the students participated

How would you rate this event out of 5? (1 being fair to 5 being excellent)



Any other suggestions/comments

Everything was great

Enriching and knowledge packed session

It was an excellent session. The most memorable part was when a team was facing connection issue and Prof. K. R. Joshi supported that team in very friendly and supportive manner.

N.A.

I have one request is every year batch have photo with teachers but this time due to covid19 it is not possible. if one photo is possible then its memory for us life longmay be it happen through online...or may be on other event i dont know how but i really wish it will happen

There is Punctuality error in my session. I know there may be internet issues or any other valid reason for that but if it is then you should start session early. Half hour late is not good. So trv to be more punctual in your other sessions and trv to be on time.

7. Conclusion

In conclusion this event KAIZEN 2K21 was an Outcome based Event which help us to meet the Course Outcomes of Final Year Project

Department is having 5 Outcomes for project and best practices is followed by faculties for all the projects to cop up with Course Outcomes of project as below

1. Student will able to apply integrating skills, software and hardware to develop prototypes

- To achieve this CO Students are timely meeting to internal Guide. Guide review direction and ensure continuous progress of project.

2. Student will able to interpret data from prototype which leads to valuable conclusion / solution of project definition

- Again this CO was initially reviewed by guide, later on 2 to 3 departmental level events were organised in which senior faculties as well as experts from industry or stake holders are invited to review students work and provide suggestions

3. Student will able to demonstrate prototype to professionals and incorporate feedback in the final project model

- To achieve above CO online Kaizen 2K21 event was organised dated 19/04/2021 in which student demonstrated their work in online to panel of experts

4. Student will able to prepare technical documentation and explore the opportunities for publications as well presentation

- Time to time all project related data is to be uploaded on GTU's project PMMS portal by students. Uploaded data review by the internal guide which either sent back to student for correction or submit on portal. This activity is timely completed as per academic schedules of University
- Apart from university protocol students have to Submit hard bound Project report to department signed by internal / external guide and Head of Department which kept in departmental library
- A Paper and poster is prepared on the project and submitted on MS Team. After reviewing paper students are encourage find possibility to publish in reputed journals
- Some of innovative projects are motivated for patenting and with funding under SSIP scheme

5. Student utilize knowledge and acquire skills like collaborations, communication and independent learning for betterment of mankind

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- All the projects were completed in a team of 2-4 students and some of projects are developed in the collaboration of industrial people.
 - Students soft skills are sharpen with various demonstration and presentation. IC department ensure that each team demonstrate their work in public domain at least 2-3 times in semester which helps to remove their stage fear and enhance communication skills.
 - Various tools like PPT, animation, simulation, video meetings etc were used in this Online events

On the concluding remarks even in such pandemic this online event was a successful attempt for students to demonstrate their project work to the world and also helped department to meet Outcomes for the subject.
