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CSDC SPECIAL EDITION



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01	VISION AND MISSION	
02	PROGRAM EDUCATIONAL OBJECTIVE	
03	PROGRAM SPECIFIC OUTCOMES	
04	PROGRAM OUTCOMES	
05	OUR FACULTY	9
06	HOD'S NOTE	10
07	CHIEF EDITOR'S NOTES	
08	INTRODUCTION TO THE ISSUE	
09	PLACEMENT DETAILS	15
10	SESSION OVERVIEWS	
11	MEET THE CREW	32
12	ACKNOWLEDGEMENT	33

VISION

To be a center of excellence in chemical engineering and to provide well-prepared professionals to the industry and society

MISSION

To provide a state-of-the-art environment to the students for better learning to cater to the chemical industries and pursue higher studies.

To provide space for the students in research to think, create and innovate things.

PROGRAM EDUCATIONAL Objectives

To produce employable graduates with the knowledge and competency in Chemical Engineering complemented by the appropriate skills and attributes.

To produce creative and innovative graduates with design and soft-skills to carry out various problem solving tasks.

To enable the students to work as teams on multidisciplinary projects with effective communication skills, individual, supportive and leadership qualities with the right attitudes and ethics.

To produce graduates who possess interest in research and lifelong learning, as well as continuously striving for the forefront of technology.

PROGRAM SPECIFIC OUTCOMES

Graduates will be able to apply chemical engineering principles to design equipment and a process plant.

They will be able to control and analyse chemical, physical and biological processes including the hazards associated with these processes.

Will be able to develop mathematical models of real world industrial problems and compute solutions to dynamic processes. 1. Engineering Knowledge:

Apply the knowledge of mathematics, science, and engineering fundamentals, to solve the complex chemical engineering problems

2. Problem analysis:

Identify, formulate, review research literature, and analyze complex chemical engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. Design/development of solutions:

Design solutions for complex chemical engineering problems and design system components or process 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 proceed valid conclusions.

PROGRAM OUTCOMES

5. Modern tool usage:

Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex chemical 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 chemical engineering practice.

7.Environment and sustainability:

Understand the impact of the professional chemical 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 chemical engineering practice.

PROGRAM OUTCOMES

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 chemical 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 changes in chemical engineering.

OUR FACULTY



Dr. Sundararaman T R Professor & HOD



Dr. K L Vincent Joseph Professor



Dr. G Vijayaraghavan Associate Professor



Dr. N T Mary Rosana Associate Professor



Dr. S Sivamani Associate Processor



Dr. Narasimha Reddy S Assistant Professor (SG)



Dr. L Anitha Jegadeeshwari Assistant Professor



Mrs. J Ambiga Devi Assistant Professor



Mrs. Kalaiarasi Assistant Professor

HOD'S NOTE

I am gratified to know that our Chemical Engineering students are once again successful in bringing another issue of the 'FILTERPRESS' magazine. It gives me immense pleasure to express my views on the release of the department magazine. This edition focuses on the Chem Skill Development Program, which was organized by CSDC, a non-profit trust dedicated to bridging the gap between academia and industry in the field of chemical engineering. Scanning the pages will enlighten you about the important milestones that the department has achieved this year. All the academic activity is continuously geared up and monitored to emerging trends of technological with cope up development and innovations.



Dr Sundararaman TR Professor and HOD

- CHIEF - *Editor's*

N O T E



S aying that I'm happy to be writing to you would be a massive understatement. It always gives me immense pride to present to you, our department magazine FILTERPRESS newest issue.

This souvenir is indeed a pious attempt to make our budding talents give shape to their creativity and learn the art of being aware. Because I believe that success depends upon the power to observe, perceive, and

explore. The enthusiastic write-ups of our young writers are indubitably sufficient to hold the interest and admiration of the reader. This issue is the CSDC special issue, that gives you the complete summary of the topics discussed and the lectures that were delivered through the Chem Skill Development Program. I take the opportunity to thank all the contributors as their contribution is the reason that makes this magazine endearing to our readers. We have put in relentless efforts to bring excellence to this treasure trove. Hope this magazine proves to be an infotainer to all readers.

Dr. L Anitha Jegadeeshwari



Bridging Academia with Industry Excellence

In order to develop industry-oriented skills and provide our chemical engineering students with unique methodologies utilized in industry, the department of chemical engineering provides a 5-week industry-oriented knowledge building program in collaboration with the Chem skill development center.



Inaugration of CSDC Training for final years, 2024 batch on 23.01.24 at Heritage Hall

Objectives:

CSDC prepares students for the demands of the chemical industry by providing practical knowledge and fostering confidence. Through industryoriented programs, students gain insights into industry standards and best practices, enhancing their competitiveness. CSDC emphasizes the importance of safety and social obligations such as Safety Management and Measures, including Quality Control. By nurturing skills and global perspectives, CSDC aims to develop students into world-class engineers equipped for the global stage.

Program Highlights:

• It provides a platform to learn variety of topics such as Chemical Process Design, Unit Operations, Chemical Reaction Engineering, Safety Management and Measures, Environmental Regulations and Compliance, Quality Control and Root Cause Analysis



Certificate Distribution program for the batch 2019-2023



Participants benefit from theoretical classes as well as 14-day In-Plant training in a Chemical Industry, providing invaluable hands-on experience and a competitive edge in the job market.



Valediction program for the batch 2020-2024 on 13.02.24



In its pursuit of excellence, CSDC serves as a beacon of innovation, equipping our chemical engineering students with the skills and knowledge essential for success in industry.

By fostering collaboration between academia and industry, our department and CSDC continues to shape generation of competent and socially responsible engineers poised to make a meaningful impact on the world stage.

PLACEMENT DETAILS BATCH 2019 - 23

CORE COMPANIES

S.NO	NAME	COMPANY
1	Ajay S	TCL Technology and Engineering
2	Aswini B	KBR
3	Deepanjali Perumal Swamy	Kothari Petro Chemicals Limited
4	Hayshika D	TPI Composites
5	Karthik Sreevatsan D	Emerson Electric
6	Kiran S	TPI Composites
7	Lavanya D	TPI Composites
8	Lokesh R Kannan	Kothari Petrochemicals Limited
9	Oviya T.K.K	Technip
10	Parameshwaran G	KBR
11	Pevankumar B	Indian Additives Limited
12	Raghavi A	Thirumalai Chemicals Ltd.
13	Srimalar R	Thirumalai Chemicals Ltd.

PLACEMENT DETAILS BATCH 2019 - 23

23

Sivabalan M

CORE COMPANIES

Venkateswara Fiber Glass Pvt Ltd.

BATCH		
S.NO	NAME	COMPANY
14	Pon Pandian K	Par Active Technology
15	Yuvasri M	Shell Business
16	Mrithula K	Shell Business
17	Preetha G	Shell Business
18	Saravanan M	Kothari Petro Chemicals Limited
19	Yuvaraj S	TPI Composites
20	Vishu Sundarai R K	Ultra Marine and Pigments Ltd.
21	Rajesh Ram M	Rajsree Sugars and Chemicals Ltd.
22	ABISHEK AYYAPPAN	Beez Innovation Labs Pvt Ltd.





TITLE: CHEMICAL PLANT LIFE CYCLE SPEAKER: MR. S. STALIN SESSION: 01

The chemical plant life cycle starts with prioritizing safety and efficiency during design and construction, followed by operational processes converting raw materials into highquality products, and concludes with decommissioning involving dismantling and remediation.

23/01/2024

TITLE: OPERATIONAL CONCEPT AND CONTROLS SPEAKER: MR.R.BALASUBRAMANIAN SESSION: 02

The operational concept and controls form а systematic framework guiding organizational processes, promoting optimal performance, and ensuring adherence to standards through meticulous monitoring, adjustment, and enhancing efficiency, safety, and quality assurance.



TITLE: PLANT DESIGN ENGINEERING DATE:23/01/2024 SPEAKER: MR. GUNASEKARAN SESSION: 03

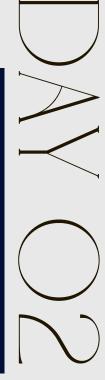
The chemical plant life cycle starts with prioritizing safety and efficiency during design and construction, followed by operational processes converting raw materials into high-quality products, and concludes with decommissioning involving dismantling and remediation.

24/01/2024



TITLE: WATER TREATMENT SPEAKER: MR. VENKAT SUBRAMANIAN SESSION: 01

The discussion emphasized crucial characteristics for industrial use, focusing on purity and temperature control. In chemical industries, the presentation highlighted the importance of water conditioning to meet specific standards, providing a comprehensive overview of water's diverse functions and stressing the critical need for tailored conditioning in specific applications.



TITLE: STEAM SYSTEM, PLANT AIR AND NITROGEN SPEAKER: MR. N NACHIAPPAN SESSION: 02

The systems manage steam for power and heating throughout industrial infrastructure, including machinery, utilities, and control systems. Nitrogen, a vital element, plays diverse roles in industry, from inert gas for preventing combustion in storage tanks to supporting cooling processes.



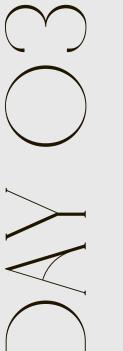


TITLE: PRESSURE VESSEL AND STORAGE TANK DESIGN SPEAKER: MR. K SHANAKARANARAYANAMURTHY K SESSION: 03

Pressure vessels and storage tanks are vital in industrial processes. Designed to meet strict safety standards, pressure vessels contain fluids or gases, finding applications in petrochemical, pharmaceutical, and manufacturing industries. Storage tanks hold bulk liquids or gases for industries such as oil and gas, chemical, and water treatment.



SPEAKER: Mr Natarajan Nagarajan



DATE: 27/01/2024

TITLE: INDUSTRIAL HEAT TRANSFER EQUIPMENT SESSION: 01

Heat exchangers, crucial in chemical and industries, exemplify this by power transferring heat between mediums. Materials selection, design precision, and regular maintenance are vital for their reliability. As technology advances, these components continue to evolve, ensuring energy efficiency and sustainability in diverse industrial processes.

TITLE: PROCESS DESIGN DRAWING AND DESIGN TOOLS SESSION: 02

Chemical engineers optimize processes with Aspen Plus and ChemCAD, emphasizing key design elements like reactors and heat exchangers. Safety and environmental considerations are prioritized through risk assessment tools.

TITLE: INDUSTRIAL MOMENTUM TRANSFER EQUIPMENT SESSION: 03

Engineers use advanced design techniques to optimize devices for efficiency and reliability, focusing on fluid dynamics, pressure, and flow rates. Crucial in pumping liquids, compressing gases, or improving ventilation, these tools play a pivotal role in maintaining and optimizing industrial processes.



TITLE: STATISTICAL PROCESS CONTROL

SPEAKER: MR. VENKAT SUBRAMANIAN SESSION: 01

Statistical Process Control (SPC) is а methodical approach that utilizes statistical tools to monitor and improve processes, ensuring consistency and quality in manufacturing or service delivery. By analysing data trends and variations, SPC empowers organizations to make informed decisions and maintain efficient operations.



29/01/2024

TITLE: OPTIMISATION & PLANT MODIFICATION SPEAKER: MR. B. PANNEER SELVAM SESSION: 02

Optimization & Plant Modification refines industrial processes for enhanced efficiency, productivity, and safety, driving sustainable improvements. Organizations strategically adjust and upgrade to optimize resource utilization and meet evolving market demands.





TITLE: NET ZERO SPEAKER: MR.N.S MURTHY SESSION: 03

Net Zero aims to balance greenhouse gas emissions with removals, striving for a carbon-neutral state, vital for combating climate change and preserving the planet for future generations. By reducing emissions and investing in renewable energy and carbon capture technologies, organizations and governments contribute to a sustainable, low-carbon future



30/01/2024

TITLE: PLANT DESIGN & SAFETY ASPECTS DATE: 30/01/2024 SPEAKER: MR. DILIP P V SESSION: 01

The session was about "Plant Design & Safety Aspects". We learned about Integrating hazard identification and risk assessment early in design. Eliminating hazards at this stage is cheaper and easier than later fixes. Adapting the design to users needs and abilities. Minimize risks from materials, processes, and layout. Aim for easy handling and access.

TITLE: COLLEGE TO INDUSTRY TRANSFORMATION SPEAKER: MS. SUNITHA TCL SESSION: 02

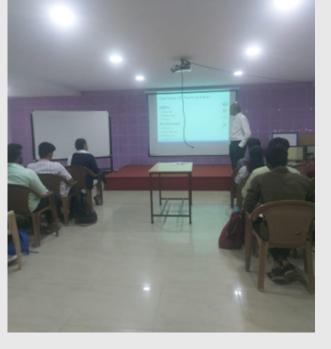
Navigating from college to industry is a transformative shift, requiring technical and soft skills such as communication, teamwork, and professionalism. Collaboration between universities and industries through relevant training ensures a smoother transition for future leaders.





TITLE: HAZOP, SIL SPEAKER: MR. DILIP P V SESSION: 03

HAZOP and SIL collaborate for process safety in chemical and oil & gas industries. HAZOP identifies hazards and operability issues, while SIL determines reliability for safety systems. SIL assigns a level (1-4) based on HAZOP findings to indicate the system's likelihood of success in preventing harm.



TITLE: OPERATION OF CHEMICAL PLANTS SPEAKER: MR. S.STALIN SESSION: 01

The session covered fundamental principles and practical techniques for safe and efficient plant operation, offering an overview of the principles and practices in chemical plant operation. Attendees gained knowledge and skills for ensuring safe and environmentally responsible operation in the chemical industry.



TITLE: OPERATION CONTROL PRACTICES SPEAKER: MR. T K PREMKUMAR SESSION: 02

The operational control session focused on performance monitoring, process optimization, inventory management, supply chain integration, quality control, maintenance strategies, risk management, and regulatory compliance. Participants gained insights to optimize processes, enhance efficiency, and drive continuous improvement in operations.

TITLE: ECONOMIC OF PRODUCTION & SAFE GUARDS SPEAKER: MR. T K PREMKUMAR SESSION: 03

The session delved into cost analysis, pricing strategies, and financial evaluation methods for optimizing production efficiency and profitability. Topics included cost-benefit analysis, marginal analysis, break-even analysis, and budgeting. Participants gained insights into maximizing revenue, understanding financial implications, and improving economic performance.





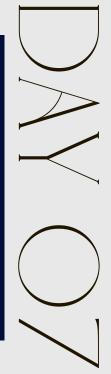
01/02/2024

TITLE: EMERGENCY PREPAREDNESS SPEAKER: MR. SHANKARANARAYANAMURTHY SESSION: 02

Emergency preparedness entails planning, organizing activities, creating plans, establishing communication strategies, conducting drills, and providing training. Being prepared enhances resilience, mitigating the impact of unexpected events.

TITLE: ROOT CAUSE ANALYSIS - RCA SPEAKER: PAUL PANDIAN SESSION: 01

Root cause analysis is a systematic method used to identify the underlying factors contributing to a problem or issue. It involves exploring the various causes, determining their relationships, and pinpointing the primary or root cause. This process helps organizations address issues at their source, leading to more effective solutions and preventing recurrence







TITLE: ULTIMATE PROTECTION & SAFE GUARDS SPEAKER: MR. DILIP SESSION: 03

Ultimate protection encompasses. comprehensive approach with robust security measures, risk assessments, and proactive strategies, covering physical and cybersecurity, emergency preparedness, access controls, training, and ongoing monitoring. Tailoring these measures to specific needs effective creates an protection system.

TITLE: TECHNICAL SERVICES DATE: 02/02/2024 SPEAKER: MR. RAVI RAJAGOPAL SESSION: 01

Technical services encompass a diverse range of support and maintenance activities for various technical systems and products. They include IT support, engineering services, technical support, maintenance, consulting, training, and documentation. These services help ensure the efficient operation, troubleshooting, and optimization of hardware, software, and processes.



02/02/2024

TITLE: PROCESS MONITORING AND IMPROVEMENTS DATE: 02/02/2024 SPEAKER: MR. R. RAMESH SESSION: 02 Process monitoring and improvement entail

analyzing workflows and procedures for enhanced efficiency, quality, and productivity. Tracking key performance indicators (KPIs) identifies optimization areas, enabling datadriven analysis to streamline operations, reduce errors, and enhance customer satisfaction.





TITLE: ACCIDENTS REPORTING AND INVESTIGATION DATE: 02/02/2024 SPEAKER: MR. SELVAM IAL SESSION: 03

Accident reporting involves documenting incidents to understand causes and prevent future occurrences. This includes gathering evidence, interviewing witnesses, and examining data. Accurate reporting ensures safety compliance and identifies trends for corrective actions.



03/02/2024

SPEAKER: Mr N.RAMADOSS

TITLE: TYPES OF POLLUTION AND ITS CONTROL MEASURES. SESSION: 01

Control measures include stricter emissions standards, promoting renewables, enforcing waste management, implementing water treatment, and encouraging sustainable agriculture. Fostering public awareness and collaboration between industries, governments, and communities are crucial for comprehensive, sustainable development and environmental health.



TITLE: EIA, PERMITS AND SUSTAINABILITY SESSION: 02 & 03

Environmental Impact Assessment (EIA) is a process to identify and evaluate the potential environmental consequences of a proposed project or development. Permits are legal authorizations granted by regulatory agencies that allow activities to proceed while adhering to environmental standards.



TITLE: BEHAVIOUR BASED SAFETY SPEAKER: MR. S MANI SESSION: 01

This lecture explores behavior types and cause-and-effect relationships, emphasizing their role in cultivating a strong safety culture within organizations. Gain insights into the psychology of behaviors for building lasting safety practices.

DATE: 06/02/2024

TITLE: INDUSTRY 4.0 SPEAKER: MR SATHIYAMURTHY SESSION: 02

The lecture on Industry 4.0 explored the transformative impact of automation, IoT, and AI modern manufacturing on processes, emphasizing the need for upskilling evolving industry to meet demands. Participants gained а comprehensive understanding of the convergence of digital technologies and its implications for future workforce dynamics.



TITLE: QUALITY CONTROL LAB SPEAKER: MR SHYAM SUNDAR SESSION: 03

Students in the quality control laboratory lecture for chemical engineers learned essential methodologies and instruments for ensuring product quality and safety in industry. Through interactive sessions, they gained insights into precision and regulatory standards crucial for maintaining excellence in production.



DATE: 07/02/2024

TITLE: TECHNOLOGY OF MANUFACTURE IN CHEMICAL INDUSTRIES SPEAKER: PREM KUMAR T K SESSION: 01 & 02

The key to unlocking the full potential and value of technology lies in the absorption of tech capabilities within the operational framework of the chemical plant. This holistic approach emphasizes the importance of careful consideration, preparedness, and collaborative efforts to harness the benefits of advanced technology in the chemical industry.





TITLE: INFRASTRUCTURE AND LOGISTICS FOR CHEMICAL INDUSTRIES SPEAKER: PREM KUMAR T K SESSION: 03

The key to unlocking the full potential and value of technology lies in the absorption of tech capabilities within the operational framework of the chemical plant. This holistic approach emphasizes the importance of careful consideration, preparedness, and collaborative efforts to harness the benefits of advanced technology in the chemical industry.



TITLE: PROJECT MANAGEMENT SPEAKER: MR. M.NANDAKUMAR SESSION: 01

In a project management lecture designed for chemical engineers, students explored adept strategies for overseeing complex chemical industry projects, focusing on resource efficiency and risk mitigation. The session, enriched with case studies and practical insights, equipped participants with valuable skills for navigating dynamic chemical engineering project environments.



DATE: 08/02/2024

TITLE: CORPORATE CAREER CHALLENGES SPEAKER: VENKAT SUBRAMANIAN SESSION: 02

Students getting a job find it difficult to adjust to the new atmosphere and have to face the harsh reality of life which they may not have expected during their academia. This session was essential to equip students with the mindset for transitioning to industry after being in academia for all of their formative years.



TITLE: FIRED HEATERS, BOILERS SPEAKER: MR. LAKSHMANAN SRINIVASAN SESSION: 03

Pressure vessels and storage tanks are vital in industrial processes, designed to contain fluids or gases at different pressures. Used in petrochemical, pharmaceutical, and manufacturing industries, pressure vessels find applications. Meanwhile, storage tanks hold bulk liquids, serving oil and gas, chemical, and water treatment industries.





DATE: 09/02/2024

ROLE OF PROCESS ENGINEER IN OIL & GAS INDUSTRY SESSION: 02

The session covered the varied roles of a process engineer, addressing tasks like HSE, Reliability, Quality, E&L, Yield Improvement, Debottlenecking, and ESG, with examples. Emphasizing the art of Process Monitoring, practical insights were drawn from case studies.

TITLE:ASSET INTEGRITY MANAGEMENT SESSION: 03

This session began by exploring the definition for Asset Integrity and what do we mean by that. The session was a follow up from the other sessions on Industrial Safety and PSM but focused towards Asset Management under various scenarios. The impact of damage to asset and corrective actions to be taken were explored in detail with case studies

TITLE: PROCESS SAFETY MANAGEMENT SPEAKER: MR. R.RAVI SESSION: 01

This session comprehensively addressed key aspects of Process Safety Management (PSM), into delving CCPS. regulations like OSHA and Through detailed analysis of industrial accidents, it underscored the vital role of PSM, examining root causes, exploring hazard and risk concepts, and potential accident investigating scenarios for a holistic understanding of industrial safety.

SPEAKER: MR N S Murthy Mckinsey & Prakash Raman MonitPro



TITLE: CASE STUDIES AND PROBLEM SOLVING SPEAKER: MR. SIVARAMAKUMAR TCL SESSION: 01 & 02

The lecture emphasized achieving operational excellence by focusing on key metrics such as a strong safety record, targeted production throughput, Overall Equipment Effectiveness (OEE), Right First Time (RFT) production, and lower production costs. Additionally, it highlighted the importance of minimizing wastages across various resources, reducing repair and maintenance costs, and ultimately ensuring customer satisfaction.



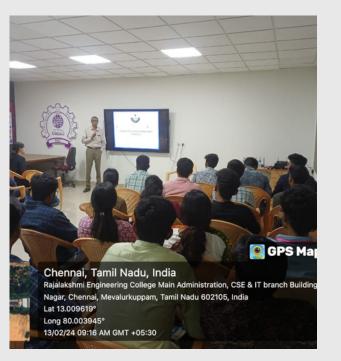
DATE: 10/02/2024



TITLE: SPILL CONTROL AND CONTAINMENT SPEAKER: S. KANNAN SESSION: 03

The lecture provided a comprehensive examination of oil spill control and containment, delving into strategies aimed at mitigating the environmental repercussions of such incidents. It highlighted the importance of proactive measures and introduced effective technologies to prevent and manage oil spills. Emphasizing the significance of environmental protection, the session also detailed response protocols to enhance preparedness and minimize the ecological impact of oil spills.





DATE: 13/02/2024

TITLE: CAREER PATH AND EMPLOYMENT AVENUES. SPEAKER: MR.SENTHIL KUMAR DHARMAR SESSION: 01

The session highlighted chemical engineering's core role in transforming raw materials into societal assets and compared various job functions like Production and Plant Design Engineering.

TITLE: DEVELOP AN ENTREPRENEUR IN YOU AND PURSUE YOUR DREAMS SPEAKER: S M BALAJI SESSION: 02

This session was designed as a pep talk for motivating the attendees to pursue their dreams rather than settle for a safer alternative. It covered essential characteristics expected of a entrepreneur.





TITLE: TQM & 6 SIGMA SPEAKER: MR R.RAVI SESSION: 03

The session addressed the fundamentals of quantifying process performance product and quality management, exploring tools for and enhancement. analysis It introduced Six Sigma, elucidating its industry relevance, application, and practical implementation through sample problems and case studies.

MEETTHE CREW, telfespless team

Rufe Adrin Rebecca

MAGAZINE HEAD DESIGN HEAD

Niranjan

EDITOR



Pragadeesh

DESIGNER





Ramya

CONTENT EDITOR

Srinidhi

CONTENT CREATOR



ACKNOWLEDGEMENT BY MAGAZINE HEAD

1/

I hope our magazine induces ideas for the betterment of humanity and lights the spark in the hearts of our dear readers. I thank the Head of the Department, the Chief Editor, and the team for their time and efforts put into making yet another issue possible.

We believe there's always space for improvement no matter how particular we are about things. We are open to suggestions and feedback which will help us shape the magazine.

Email: filterpressmagazine@gmail.com

Filterpress

