



Bharatiya Vidya Bhavan's

SARDAR PATEL COLLEGE OF ENGINEERING

Andheri (W) Mumbai-400058

(Government Aided Autonomous Institute) Affiliated To University of Mumbai



Activity Report

“National Level Webinar on Lean Six Sigma”

30th October 2023

Venue: Google Meet

Organized by:-

IIIE -SPCE STUDENT CHAPTER

Under Department Of Mechanical Engineering & IQAC

In Collaboration With



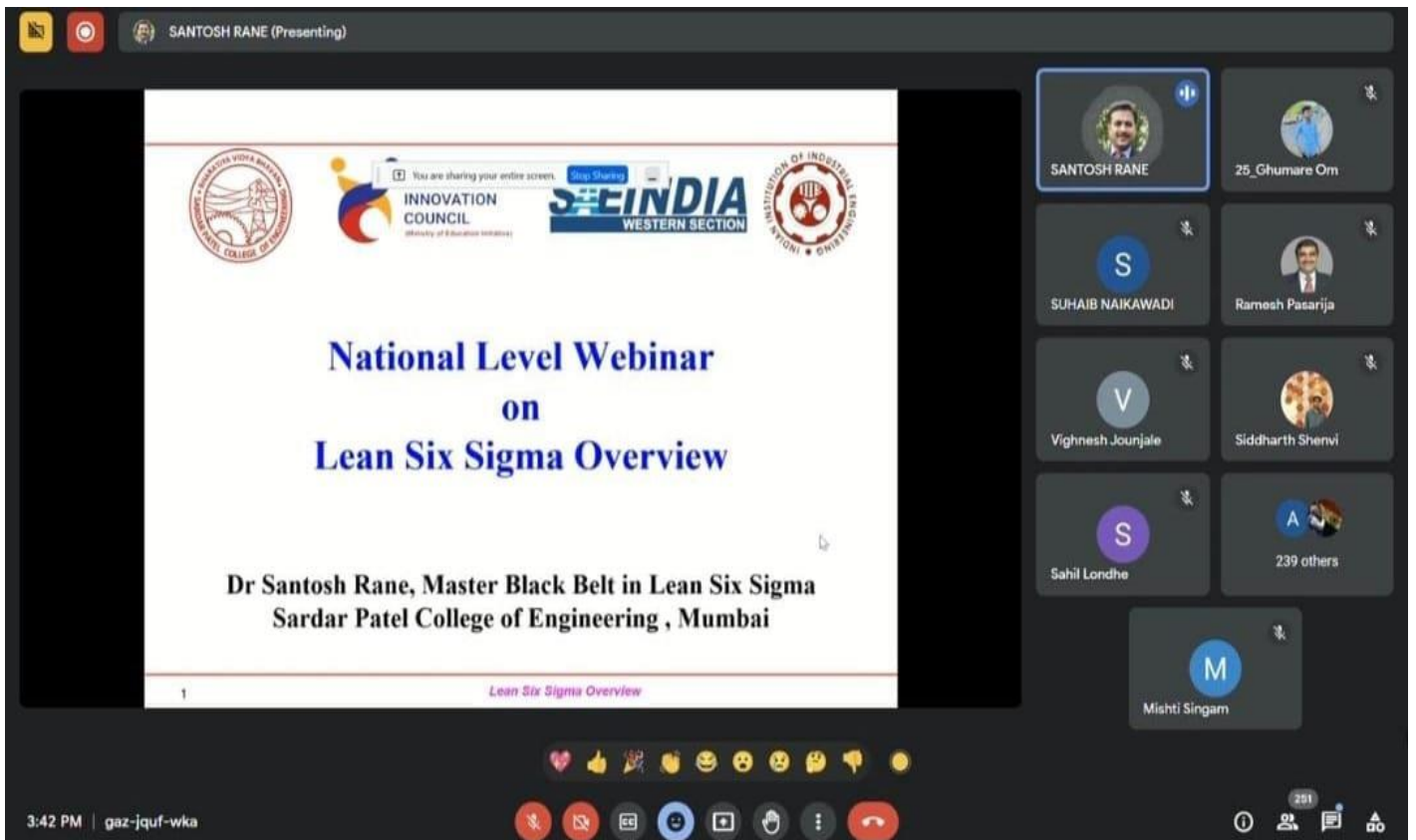
ABOUT THE EVENT

DATE OF EVENT: OCTOBER 30, 2023

TIME OF EVENT: 3:30 p.m.

VENUE: GOOGLE MEET

NUMBER OF PARTICIPANTS:



In an era characterized by rapidly evolving technologies and increasing global competitions, organizations across various sectors are constantly seeking innovative strategies to enhance efficiency, reduce waste and improve overall performance. One such methodology that has gained significant traction in recent years is LEAN SIX SIGMA, a powerful combination of Lean principles and Six Sigma methodologies aimed at minimizing defects and optimizing processes.

Recognizing the importance of fostering a culture of continuous improvement among future engineers and industry professionals, the IIE-SPCE Student Chapter took the initiative to organize a national-level webinar on Lean Six Sigma. The webinar began with a warm welcome to everybody present followed by giving information about the main agenda of the webinar which was 'Learning the methodologies used in Lean Six Sigma and how we can implement them in our work life'.

After the introduction, Dr. Ramesh Pasarija gave a presentation on SAE INDIA.

The screenshot shows a Zoom meeting interface. The main window displays a presentation slide titled "About SAEINDIA". The slide features the SAEINDIA logo (25th anniversary) and two bullet points. The first bullet point states that SAEINDIA is a "Member Driven and Not for Profit" professional engineering society. The second bullet point explains that becoming a member provides benefits geared towards the needs of the mobility engineering community. To the right of the slide, a grid of participant video thumbnails is visible, including Ramesh Pasarija, Saras Gurav, Prasad Yadav, SUHAIB NAIKAWADI, SANTOSH RANE, Rijwan Patel, S Aravind, and Mishti Singam. The bottom of the screen shows the Zoom control bar with a timestamp of 3:34 PM and the ID gaz-jquf-wka.

About SAEINDIA

- SAEINDIA is a **"Member Driven and Not for Profit" professional engineering society** whose membership represents practically every engineering and scientific discipline. Its members combine their specialized abilities to further advance the **Research, Development, Design, Manufacture and Utilization of Vehicles which operate on Land, Air and Space.**
- **By becoming a member of SAEINDIA you become a part of a global organization** whose benefits are geared specifically to the needs of the mobility engineering community. Your formal education and professional development will be enhanced through your SAEINDIA member benefits.

SAE India covers various topics to raise awareness about topics such as product management, machine learning, etc.

The screenshot shows a Zoom meeting interface. The main window displays a presentation slide titled "Program List which would benefit faculties and students". The slide lists 22 items, including workshops, webinars, and training programs. To the right, the participant grid is updated, showing Ramesh Pasarija, Abuzar Mulla, Prasad Yadav, SANTOSH RANE, SUHAIB NAIKAWADI, Aditya Chaugule, S Aravind, and Mishti Singam. The bottom of the screen shows the Zoom control bar with a timestamp of 3:36 PM and the ID gaz-jquf-wka.

Program List which would benefit faculties and students

1. How Product Fails? & Why Product Fails?
2. How to determine optimum motor rating for range and performance?
3. Challenges for Battery thermal system modelling
4. How to select optimum hybrid architectures using virtual tools
5. Tire Testing – Why We Need It, and How to Do It Efficiently
6. Fuel Cell Technology & New Business Scenario
7. Hydraulic Systems for Off Highway Vehicles
8. Machine Learning
9. SWOT Analysis & Goal Setting
10. Webinar on Leadership & Entrepreneurship
11. Webinar on Production Excellence in Manufacturing
12. How to Write SAE Technical Paper
13. FDP on Automotive Product Development & Best Manufacturing Practices
14. Workshop on Vehicle Dynamics
15. Webinar Series on Lithium-ion Battery Technology.
16. Additive Manufacturing (3D Printing)
17. How to prepare effectively for GATE exam.
18. Students Training on Basics of Python & Image Processing using OpenCV
19. Faculty Development Program on Electric Mobility
20. Three Days Workshop on AI in Automotive Industry
21. Business Communication
22. Carbon Footprint.

ABOUT THE SPEAKER



- Dr. Santosh Rane: The Faculty and former Dean of Academics at SPCE, Mumbai.
- He's Ph.D., Master Black Belt in Lean Six Sigma, ME and Ph.D. in Mechanical.
- He has published 115+ research papers, 2077 Google Scholar citations, 14 patents (9 filed, 5 granted) and led over 350 Business Excellence projects in MNCs.
- He has won 13 accolades, including the National Productivity Award Platinum Grade and SAE Foundation Champion Award.
- He has been the Programme Coordinator for Mechanical Engineering, Faculty Advisor for SPCE Racing Team and Faculty Advisor for IIIE-SPCE Student Chapter.
- He has served as a Research Mentor for various Engineering colleges and conducted 63 informative sessions for students.

OVERVIEW OF THE EVENT

The esteemed speaker Dr. Santosh Rane sir talked about what Lean Six Sigma is and its important functions. It was followed by a MCQ session to revise the main facts and ideas learnt in the discussion. Then began the Question and Answer session where the participants interacted and asked their queries regarding Lean Six Sigma. An in depth interaction took place between the speaker and the participants in the webinar. Their queries varying from implementation of the tools in sigma to the course duration and levels were answered.

The screenshot displays a Zoom webinar interface. The top portion shows a slide titled "Lean Six Sigma Overview" (slide 5) featuring three normal distribution curves. The first curve is labeled "Off-Target" and "Too Much Variation". The second curve is labeled "Centered On-Target". The third curve is labeled "Reduce Spread". Arrows indicate the process of "Center Process" moving from the off-target state to the centered state, and "Reduce Spread" moving from the centered state to the reduced spread state.

The bottom portion shows a slide titled "Presentation Outline" (slide 2) with the following content:

- **Presentation Outline**
 - ✓ Introduction to Lean
 - ✓ Introduction to Six sigma
 - ✓ DMAIC Roadmap
 - ✓ Tools used in Lean Six Sigma
 - ✓ Lean Six Sigma integrated Approach

On the right side of the interface, a grid of participant avatars is visible, including Santosh Rane, 25_Ghumare Om, Suhaib Naikawadi, Ramesh Pasarija, Vighnesh Jourjale, Siddharth Shervi, Sahil Londhe, 239 others, and Mishti Singam. The Zoom control bar at the bottom shows the time as 3:45 PM and the host as SANTOSH RANE (Presenting).

q

We were introduced to DMAIC Toolbox which is a data-driven improvement cycle used in Six Sigma and other process improvement methodologies. The DMAIC process is commonly applied in various industries to enhance and optimize processes, products, or services. It refers to the set of tools and techniques used at each stage of the DMAIC process to analyze and improve processes. These tools can include process maps, cause-and-effect diagrams, statistical analysis tools, brainstorming techniques, control charts, and many others. The specific tools used in the DMAIC process depend on the nature of the problem being addressed and the data available for analysis.

SANTOSH RANE (Presenting)

D-M-A-I-C - Toolbox

| DEFINE | MEASURE | ANALYZE | IMPROVE | CONTROL |
|---|--|--|---|--|
| <ol style="list-style-type: none"> 1. Project Selection 2. Value Stream Map 3. Financial Analysis 4. Project Charter 5. Stakeholder Analysis 6. Communication Plan 7. SIPOC Map 8. High Level Process Map 9. Non-Value Added Analysis 10. VOC & Kano Analysis 11. QFD 12. RACI & Quad Charts 13. Multi-Generational Plan | <ol style="list-style-type: none"> 1. Operational Definitions 2. Data Collection Plan 3. Pareto Chart 4. Histogram 5. Box Plot 6. Statistical Sampling 7. Measurement System Analysis 8. Control Charts 9. Process Cycle Efficiency 10. Process String 11. Process Capability | <ol style="list-style-type: none"> 1. Pareto Charts 2. Fishbone Diagrams 3. CAE matrix 4. Brainstorming 5. Detailed "As-Is" process maps 6. Basic statistical tools 7. Constraint Identification 8. Time Trap analysis 9. Non-Value Added analysis 10. Hypothesis testing 11. Confidence intervals 12. FMEA 13. Regression Analysis 14. ANOVA 15. Queuing Theory 16. Analytical Batch Sizing | <ol style="list-style-type: none"> 1. Brainstorming 2. Benchmarking 3. TPM 4. 5S 5. Line Balancing 6. Process Flow Improvement 7. Replenishment Pull 8. Sales & operations planning 9. Set up reduction 10. Poka-Yoke 11. FMEA 12. Hypothesis Testing 13. Solution Selection Matrix 14. "To Be" Process maps 15. Piloting and simulation | <ol style="list-style-type: none"> 1. Control Charts 2. SOPs 3. Training Plan 4. Communication Plan 5. Implementation Plan 6. Visual Process Control 7. Mistake-proofing 8. Process Control Plan 9. Project Commissioning 10. Project Replication 11. Plan-Do-Check-Act Cycle |

Lean Six Sigma Overview 46

4:24 PM | gaz-jquf-wka

SANTOSH RANE (Presenting)

PROCESS CAPABILITY INDICES

1. $Cp = \frac{USL - LSL}{6\sigma}$
2. $Cpk = \min(CPU, CPL)$

Where

$$CPU = \frac{USL - \bar{X}}{3\sigma}, \quad CPL = \frac{\bar{X} - LSL}{3\sigma}$$

Desirable : To have Cp, Cpk ≥ 1.33.

DIFFERENCE BETWEEN Cp & Cpk

1. Cp is a ratio of tolerance and six sigma. It does not talk about process setting. This can be appreciated that even if variability is small & setting is out we will have Cp very high. This is therefore not an effective indicator. Eventhough process setting may be totally out, Cp value could be well above 1.33. Therefore, Cp can be best described as process potential index.
2. Cpk takes care of setting as well as variation. Therefore Cpk describes the actual condition.

4:14 PM | gaz-jquf-wka

KEY TAKEAWAYS

- Lean focuses on eliminating waste and improving efficiency in processes, aiming to deliver more value to customers with fewer resources. It emphasizes continuous improvement, teamwork, and customer satisfaction.
- Six Sigma focuses on reducing defects and variations in processes, making them more reliable and consistent. It uses statistical tools and techniques to identify and eliminate defects, ultimately improving the quality of products or services.
- Combining Lean and Six Sigma, organizations can achieve significant improvements in quality, efficiency, and customer satisfaction.
- The Lean Six Sigma approach involves defining, measuring, analyzing, improving, and controlling processes (DMAIC), leading to data-driven decision-making and sustainable improvements. It is widely used in various industries to enhance performance and competitiveness.
- A process that achieves Six Sigma quality produces only 3.4 defects per million opportunities, indicating an extremely high level of quality and efficiency.

The screenshot shows a Zoom meeting interface. The main window displays a presentation slide titled "Six Sigma for Results" with the following content:

- Framework based on standard quality systems methodology of the **5 Ws and 2Hs Army**:
 - ✓ **What** (what is Six Sigma)?
 - ✓ **Why** (why do it; why should we care)?
 - ✓ **Where** (Where is it applied; where is the emphasis)?
 - ✓ **When** (when is the best time)?
 - ✓ **Who** (who is involved)?
 - ✓ **How** (how do we do it)?
 - ✓ **How Much** (how much will it cost)?

At the bottom of the slide, it says "Lean Six Sigma Overview".

On the right side of the Zoom window, there is a grid of participant avatars. The participants listed are: SANTOSH RANE (Presenting), 25_Ghumare Om, SUHAIB NAIKAWADI, Ramesh Pasarija, Sagar Murugkar, Siddharth Shervi, Vivek Pawar, 237 others, and Mishti Singam.

The Zoom meeting controls at the bottom show the time as 3:54 PM and the meeting ID as gaz-jqf-wka. There are 246 participants in the meeting.

VOTE OF THANKS

- The event was finally concluded by thanking SAE club, SPCE, the entire IIIE- SPCE Student Chapter team and all the participants of the event.
- A closing statement was given by the hosts expressing their gratitude to Dr. Santosh Rane sir such an amazing insight towards Lean Six Sigma and motivating everyone.
- The participants were once again thanked for their presence at the webinar.
- The main objective of the webinar which was to help in everybody's respective individual endeavours was also highlighted.
- The meet finally ended with everyone leaving their regards during their departure from the meet.

Written and compiled by

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