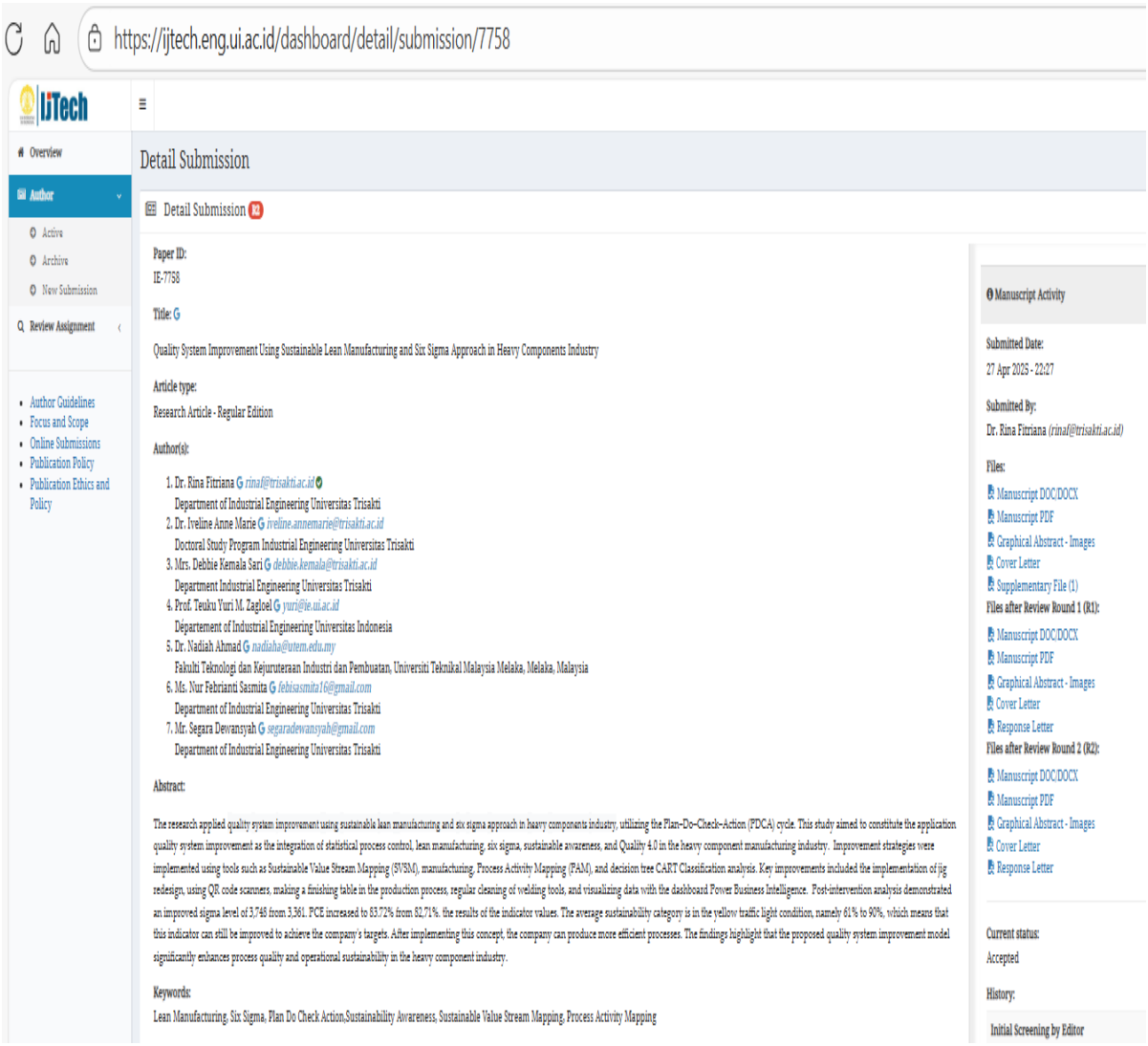

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Detail Submission

Detail Submission

Paper ID:
IE-7758

Title:

Quality System Improvement Using Sustainable Lean Manufacturing and Six Sigma Approach in Heavy Components Industry

Article type:
Research Article - Regular Edition

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Abstract:

The research applied quality system improvement using sustainable lean manufacturing and six sigma approach in heavy components industry, utilizing the Plan–Do–Check–Action (PDCA) cycle. This study aimed to constitute the application quality system improvement as the integration of statistical process control, lean manufacturing, six sigma, sustainable awareness, and Quality 4.0 in the heavy component manufacturing industry. Improvement strategies were implemented using tools such as Sustainable Value Stream Mapping (SVSM), manufacturing, Process Activity Mapping (PAM), and decision tree CART Classification analysis. Key improvements included the implementation of jig redesign, using QR code scanners, making a finishing table in the production process, regular cleaning of welding tools, and visualizing data with the dashboard Power Business Intelligence. Post-intervention analysis demonstrated an improved sigma level of 3,748 from 3,361. PCE increased to 83.72% from 82.71%. the results of the indicator values. The average sustainability category is in the yellow traffic light condition, namely 61% to 90%, which means that this indicator can still be improved to achieve the company's targets. After implementing this concept, the company can produce more efficient processes. The findings highlight that the proposed quality system improvement model significantly enhances process quality and operational sustainability in the heavy component industry.

Keywords:
Lean Manufacturing, Six Sigma, Plan Do Check Action,Sustainability Awareness, Sustainable Value Stream Mapping, Process Activity Mapping

Manuscript Activity

Submitted Date:
27 Apr 2025 - 22:27

Submitted By:
Dr. Rina Fitriana *(rinaf@trisakti.ac.id)*

Files:
Manuscript DOC/DOCX
Manuscript PDF
Graphical Abstract - Images
Cover Letter
Supplementary File (1)

Files after Review Round 1 (R1):
Manuscript DOC/DOCX
Manuscript PDF
Graphical Abstract - Images
Cover Letter
Response Letter

Files after Review Round 2 (R2):
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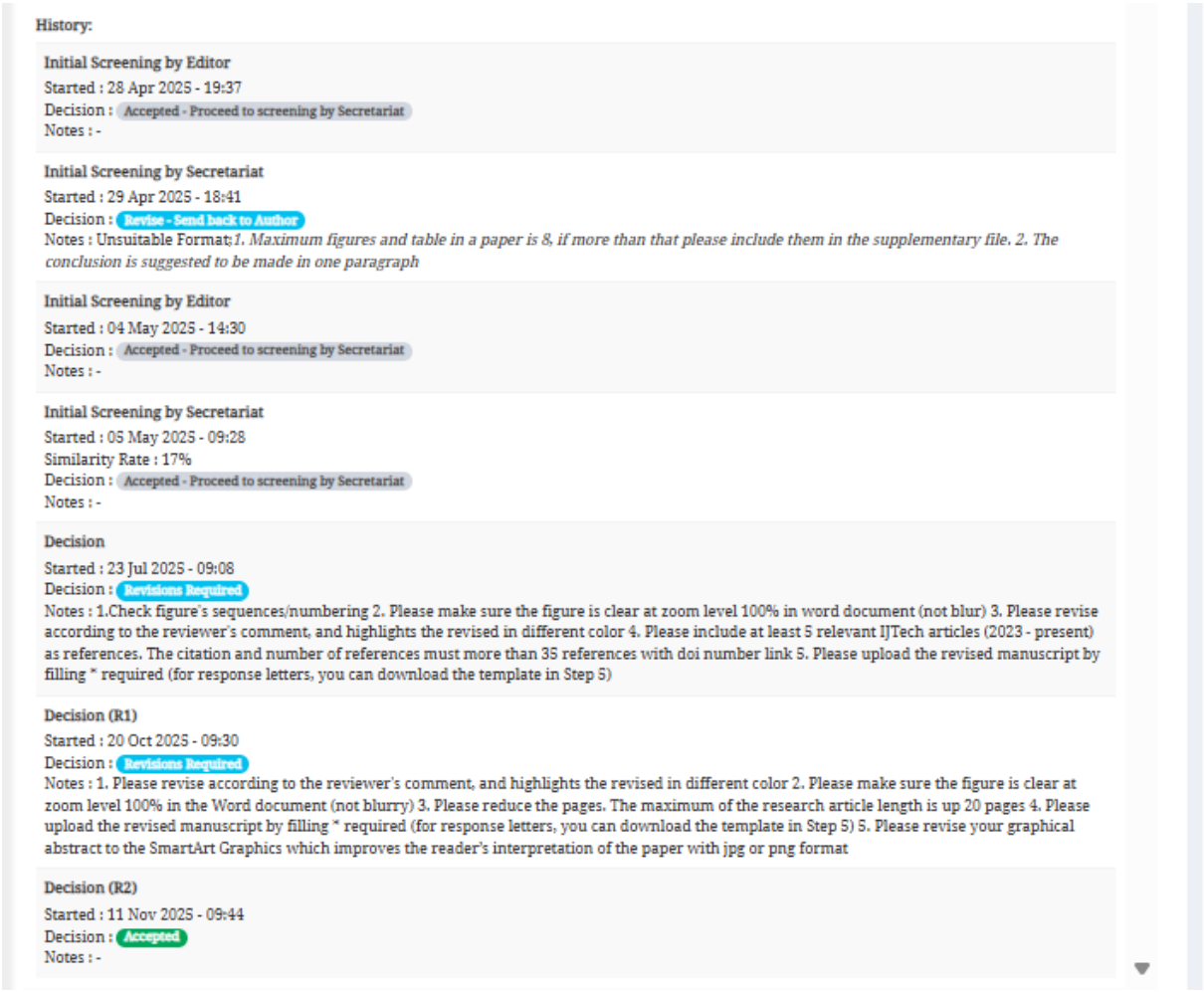
Response Letter

Current status:
Accepted

History:
Initial Screening by Editor



History:

Initial Screening by Editor
Started : 28 Apr 2025 - 19:37
Decision : Accepted - Proceed to screening by Secretariat
Notes : -

Initial Screening by Secretariat
Started : 29 Apr 2025 - 18:41
Decision : Revise - Send back to Author
Notes : Unsuitable Format; *1. Maximum figures and table in a paper is 8, if more than that please include them in the supplementary file. 2. The conclusion is suggested to be made in one paragraph*

Initial Screening by Editor
Started : 04 May 2025 - 14:30
Decision : Accepted - Proceed to screening by Secretariat
Notes : -

Initial Screening by Secretariat
Started : 05 May 2025 - 09:28
Similarity Rate : 17%
Decision : Accepted - Proceed to screening by Secretariat
Notes : -

Decision
Started : 23 Jul 2025 - 09:08
Decision : Revisions Required
Notes : 1.Check figure's sequences/numbering 2. Please make sure the figure is clear at zoom level 100% in word document (not blur) 3. Please revise according to the reviewer's comment, and highlights the revised in different color 4. Please include at least 5 relevant IJTech articles (2023 - present) as references. The citation and number of references must more than 35 references with doi number link 5. Please upload the revised manuscript by filling * required (for response letters, you can download the template in Step 5)

Decision (R1)
Started : 20 Oct 2025 - 09:30
Decision : Revisions Required
Notes : 1. Please revise according to the reviewer's comment, and highlights the revised in different color 2. Please make sure the figure is clear at zoom level 100% in the Word document (not blurry) 3. Please reduce the pages. The maximum of the research article length is up 20 pages 4. Please upload the revised manuscript by filling * required (for response letters, you can download the template in Step 5) 5. Please revise your graphical abstract to the SmartArt Graphics which improves the reader's interpretation of the paper with jpg or png format

Decision (R2)
Started : 11 Nov 2025 - 09:44
Decision : Accepted
Notes : -

List of Changes

Manuscript:

#IE-7758 entitled

Quality System Improvement Using Sustainable Lean Manufacturing and Six Sigma Approach in Heavy Components Industry

Response and Revision made by Author(s)

Editor:

No	Comments	Revision/Changes
1	Please revise according to the reviewer's comment, and highlights the revised in different color	We have revised according to the reviewer's comment, and highlights the revised in different color
2	Please make sure the figure is clear at zoom level 100% in the Word document (not blurry)	We have made sure the figure is clear at zoom level 100% in the Word document (not

		blurry)
3	Please reduce the pages. The maximum of the research article length is up 20 pages	We have reduced the pages. The maximum of the research article length is up 20 pages
4	Please upload the revised manuscript by filling * required (for response letters, you can download the template in Step 5)	We have uploaded the revised manuscript by filling * required
5	Please revise your graphical abstract to the SmartArt Graphics which improves the reader's interpretation of the paper with jpg or png format	We have revised my graphical abstract to the SmartArt Graphics which improves the reader's interpretation of the paper with jpg or png format

Reviewer 1:

No	Comments	Revision/Changes
1	**Introduction:** Authors mentioned that the inefficiencies affect delivery performance and product quality and diminish the company's sustainability performance. It is unclear what kind of sustainability performance impacted by what kinds of inefficiencies. Authors need to explain more about it related to why the methods proposed was needed for this company, to solve which inefficiencies etc.	1. We have explained what kind of sustainability performance is impacted by what kinds of inefficiencies. We have explained more about it, related to why the methods proposed were needed for this company, to solve which inefficiencies, etc.
2	**Methodology:** Is there any comparison between before and after improvement, as well as the evaluation steps? It should be explicitly mentioned in Figure 1. Regarding dashboard, it is necessary to explain detailed steps of making dashboard, does it follow a certain methodology etc.	We have revised the comparison between before and after improvement. We have revised Figure 1 We have added detailed steps for making the dashboard
3	**Results and Discussion:** Previous comments has been addressed, so it is good.	-
4	**References:** Good	-

Reviewer 2:

No	Comments	Revision/Changes
1	**Introduction:** The authors have revised the reviewer's comments accordingly.	-
2	**Methodology:** The authors have revised the reviewer's comments accordingly.	-
3	**Results and Discussion:** The authors have revised the reviewer's comments accordingly.	-
4	**References:** The authors have revised the reviewer's comments accordingly.	-

Reviewer 3:

No	Comments	Revision/Changes
1	**Introduction:** Provide better caption for all graphical representation.	We have provided better caption for all graphical representation.
2	**Methodology:** Put all equations in the method and provide the numbers.	We have put all equations in the method and provided the numbers.
3	**Results and Discussion:** Improve figures. **Attachment from reviewer:** Click to download	We have improved figures.
4	**References:** ensure using updated resource with the link as well.	We have ensured the use of updated resources with the link as well.
5	**Other:** Please follow this guideline to prepare your graphical abstract. https://ijtech.eng.ui.ac.id/public/GuidelineforGraphicalAbstract.pdf	We have followed the guidelines to prepare our graphical abstract.

INTERNATIONAL JOURNAL OF TECHNOLOGY
ISSN: 2086-9614

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Author(s) : Rina Fitriana1*, Iveline Anne Marie2, Debbie Kemala Sari1, Teuku Yuri M. Zagloel3 , Nadiah Ahmad4, Nur Febrianti Sasmita1 , Segara Dewansyah1

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