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Kaizen Presentation

Kaizen Theme: Ergonomic Risk Suit Assessment to improve the employees' health

Date of Implementation: 2024 - 2025

Productivity
Quality
Cost
Delivery
EHS

EHS

Company Introduction

Name: ITW India Pvt Ltd, Pune

Product: Plastic Components

Product Photograph & function:
Plastic Components and Fastner Manufacturing.

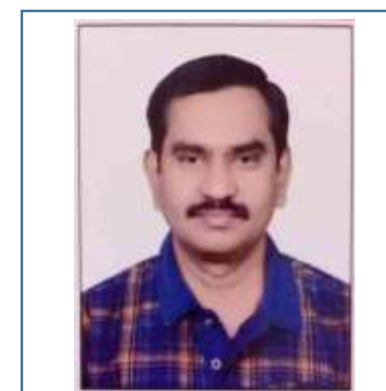
Team Introduction



Name: Payal Turkar

Designation: Senior Safety Officer

Department: EHS & Sustainability



Name: Kiran Rane

Designation: Assistant Manager

Department: Maintenance



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Company Introduction

ITW India

Corporate & North Sales Office

ITW India Pvt. Ltd.
Level -1, Lotus Plaza (Opp. ITI)
Meharauli-Gurgaon Road, Sector-14
Gurgaon, Haryana-122001
+91-124-3020604

Journey So Far:

Established Design & Development Center	2003
Pune Plant	2004
Chennai Plant	2005
Gurgaon Sales Office/ Warehouse	2008

Fuel Doors and Housings



Inside Door Handles



Outside Door Handles



Hole Plugs



Rivets & Screws



Grommet



Weatherstrip Clips



Panel Clips



Sales, Design and Mfg Plant

ITW India Pvt. Ltd.
995/2/1 Dingrajwadi,
Pune -Nagar Road,
Near Kalyani Forge,
Tal - Shirur, Dist - Pune -412207
Maharashtra -India

Manufacturing Plant

ITW India Pvt. Ltd.
A-36/1, Sipcot Industrial Park,
Oragadam Village,
Sriperumbudur Taluk,
Kanchipuram-602105
Tamilnadu, India



Ergonomic

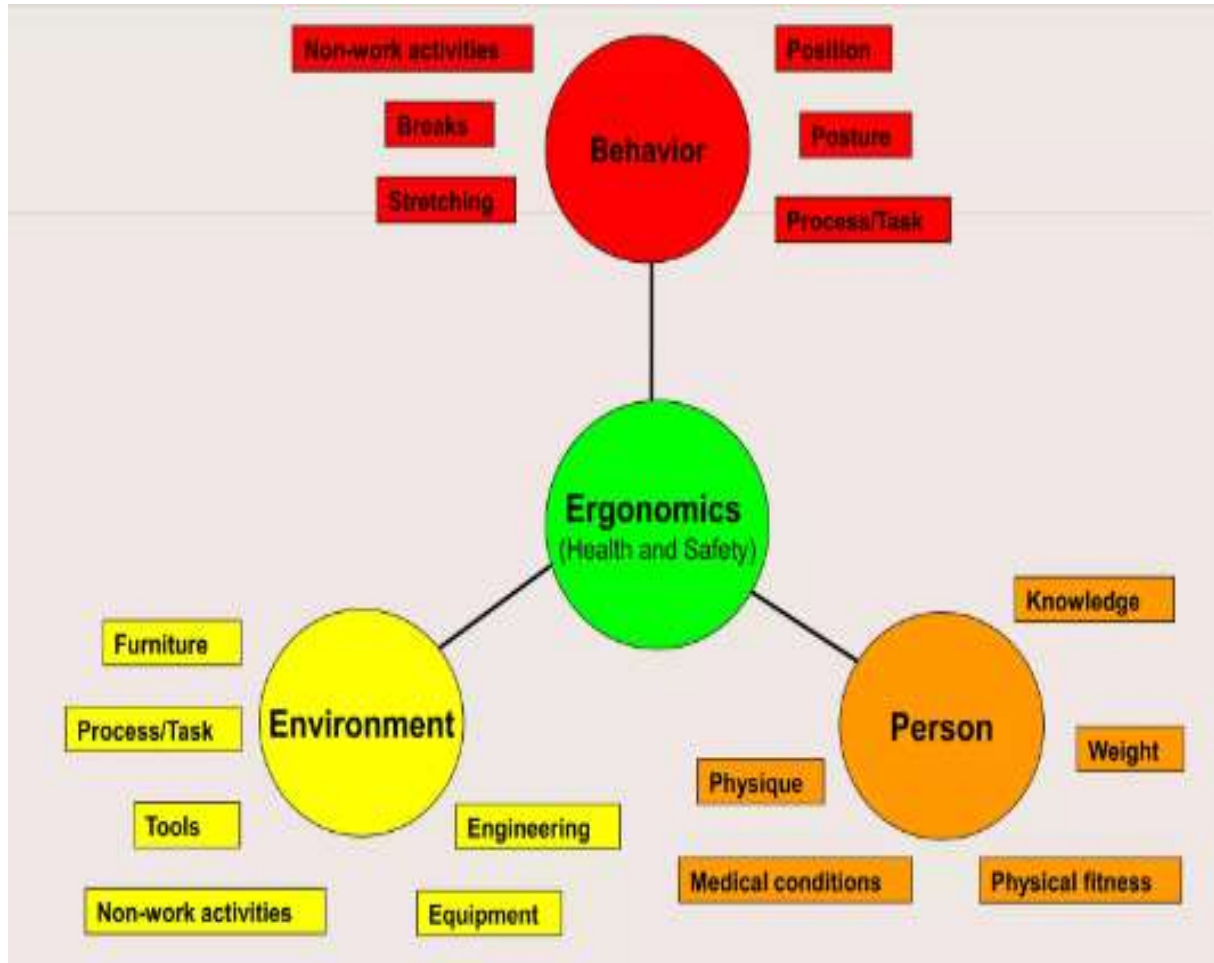
- ERGO = Work
- NOMICS = “Rules” or “Laws”
- Ergonomics Literally means “the law of work”
- “Designing the job to fit the worker, instead of forcing the worker to fit the job.”
- It is study of people efficiency at their working environment.
- Ergonomics is used in a workplace to help to prevent repetitive and cumulative injuries.



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Factors of Ergonomic



Awkward Postures



Repetition



+

Force





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Introduction of the software

Ergonomic Risk Suit software is an advanced, AI-powered ergonomic assessment platform designed to identify, analyze, and reduce ergonomic risks in the workplace using video-based posture analysis.

By leveraging **computer vision** and industry-standard tools like RULA, REBA, and NIOSH, Tu Meke enables organizations to conduct fast, accurate, and scalable ergonomic evaluations—without requiring wearable sensors or in-depth ergonomics expertise.

1. Record or upload Video

2. Automated Ergonomic Risk Scoring

- **RULA** (Rapid Upper Limb Assessment)
- **REBA** (Rapid Entire Body Assessment)
- **NIOSH Lifting Equation** (National Institute of occupational health and safety).

3. Visual Risk Feedback





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Objective of the Assessment

1. Identify Ergonomic Risk Factors

- Detect poor postures, excessive force, repetition, and awkward movements during job tasks.
- Highlight body areas under strain (e.g., back, shoulders, wrists).

2. Quantify Risk Levels

- Use tools like RULA, REBA, NIOSH, or strain index models.
- Assign scores or levels (e.g., low, medium, high risk) to help prioritize interventions.

3. Provide Visual Feedback

- Use video analysis to show posture risks and heat maps.
- Help workers and managers visually understand ergonomic problems.

4. Recommend Ergonomic Improvements

- Suggest workstation redesign, tool adjustments, or posture training.
- Enable data-backed decision-making for safer work practices.

5. Enhance Worker Health and Safety

- Reduce the incidence of MSDs, fatigue, and injury.
- Improve overall worker comfort and job satisfaction.

6. Increase Productivity and Efficiency

- Reduce absenteeism, injury-related downtime, and compensation claims.
- Create a more efficient, ergonomic workflow with fewer delays and errors.



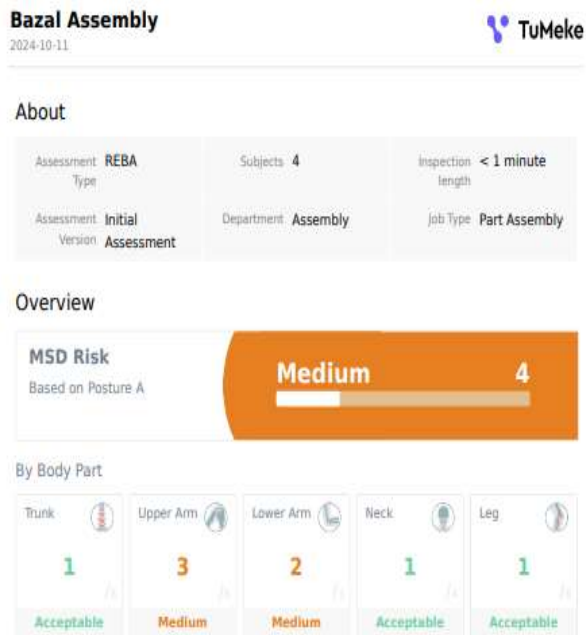
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Before and After Evaluation

BEFORE KAIZEN

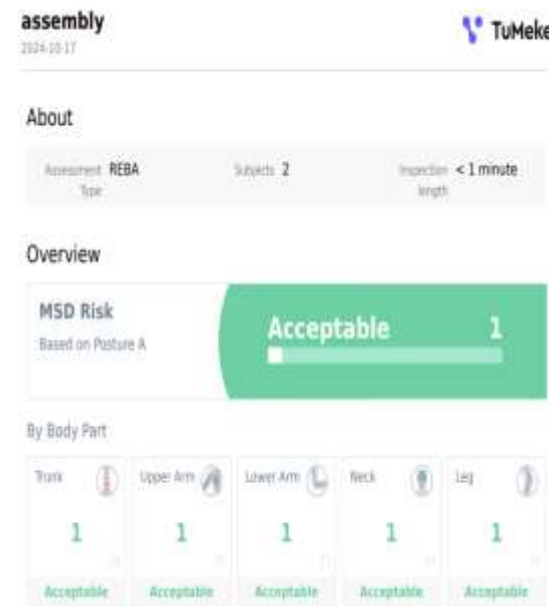
Photograph/Video



Description: Assembly inspection station- While assembly inspection there were more stress on the upper arm and lower arm at the time of repetitive movement and ergonomically uncomfortable for long hours working. During assessment it has been detected as medium risk.

AFTER KAIZEN

Photograph/Video



Description: After Ergonomic risk suit assessment by the Ergonomic risk software, as per software recommendation worktable has been modified and post assessment done. After worktable modification assessment done and risk reduced from medium to Acceptable.



Risk Assessment Calculation

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REBA Assessment Worksheet

Bazal Assembly

Oct 11, 2024



A. Neck, Trunk and Leg Analysis

Step 1: Locate Neck Position



1

Neck Score

Step 1a: Adjust...

If neck is twisted: +1
If neck is side bending: +1

Step 2: Locate Trunk Position



1

Trunk Score

Step 2a: Adjust...

If trunk is twisted: +1
If trunk is side bending: +1

Step 3: Legs



1

Leg Score

Step 4: Look-up Posture Score in Table A

Using values from steps 1-3 above, locate score in Table A

1

Posture Score A

Step 5: Add Force/Load Score

If load < 11 lbs: +0
If load 11 to 22 lbs: +1
If load > 22 lbs: +2

Adjust: If shock or rapid build up of force: +1

+

0

Force/Load Score

=

1

Score A

Step 6: Score A, Find Row in Table C

Add values from steps 4 & 5 to obtain Score A. Find Row in Table C.

SCORES

Table A		Neck											
		1				2				3			
Legs		1	2	3	4	1	2	3	4	1	2	3	4
Trunk Posture Score	1	1	2	3	4	1	2	3	4	3	3	5	6
	2	2	3	4	5	3	4	5	6	4	5	6	7
	3	2	4	5	6	4	5	6	7	5	6	7	8
	4	3	5	6	7	5	6	7	8	6	7	8	9
	5	4	6	7	8	6	7	8	9	7	8	9	9

Table B		Lower Arm					
		1			2		
Wrist		1	2	3	1	2	3
Upper Arm Score	1	1	2	2	1	2	3
	2	1	2	3	2	3	4
	3	3	4	5	4	5	5
	4	4	5	5	5	6	7
	5	6	7	8	7	8	8
	6	7	8	8	8	9	9

Score A	Table C											
	Score B											
	1	2	3	4	5	6	7	8	9	10	11	12
1	1	1	1	2	3	3	4	5	6	7	7	7
2	1	2	2	3	4	4	5	6	7	7	7	8
3	2	3	3	3	4	5	6	7	7	8	8	8
4	3	4	4	4	5	6	7	8	8	9	9	9
5	4	4	4	5	6	7	8	8	9	9	9	9
6	6	6	6	7	8	8	9	9	10	10	10	10
7	7	7	7	8	9	9	9	10	10	11	11	11
8	8	8	8	9	10	10	10	10	10	11	11	11
9	9	9	9	10	10	10	11	11	11	12	12	12
10	10	10	10	11	11	11	11	12	12	12	12	12
11	11	11	11	11	12	12	12	12	12	12	12	12
12	12	12	12	12	12	12	12	12	12	12	12	12

3

Table C Score

+

1

Activity Score

=

4

REBA Score

REBA Scoring

1	negligible risk
2 or 3	low risk, change may be needed
4 to 7	medium risk, further investigation, change soon
8 to 10	high risk, investigate and implement change
11 +	very high risk, implement change

B. Arm and Wrist Analysis

Step 7: Locate Upper Arm Position



Step 7a: Adjust...

If shoulder is raised: +1
If upper arm is abducted: +1
If arm is supported or person is leaning: -1

3

Upper Arm Score

Step 8: Locate Lower Arm Position



2

Lower Arm Score

Step 9: Locate Wrist Position



1

Wrist Score

Step 9a: Adjust...

If wrist is bent from midline or twisted: +1

Step 10: Look-up Posture Score in Table B

Using values from steps 7-9 above, locate score in Table B

4

Posture Score B

Step 11: Add Coupling Score

Well fitting Handle and mid range power grip	good: +0
Acceptable but not ideal hand hold or coupling acceptable with another body part	fair: +1
Hand hold not acceptable but possible	poor: +2
No handles, awkward, unsafe with any body part	unacceptable: +3

1

Coupling Score

=

Step 12: Score B, Find Column in Table C

Add values from steps 10 & 11 to obtain Score B. Find column in Table C and match with Score A in row from step 6 to obtain Table C Score.

5

Score B

Step 13: Activity Score

- +1 1 or more body parts are held for longer than 1 minute (static)
- +1 Repeated small range actions (more than 4x per minute)
- +1 Action causes rapid large range changes in postures or unstable base



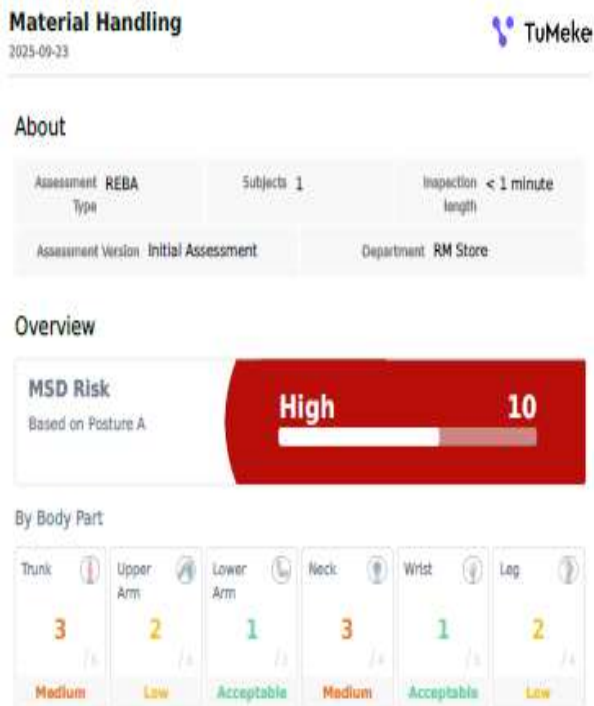
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Before and After Evaluation

BEFORE KAIZEN

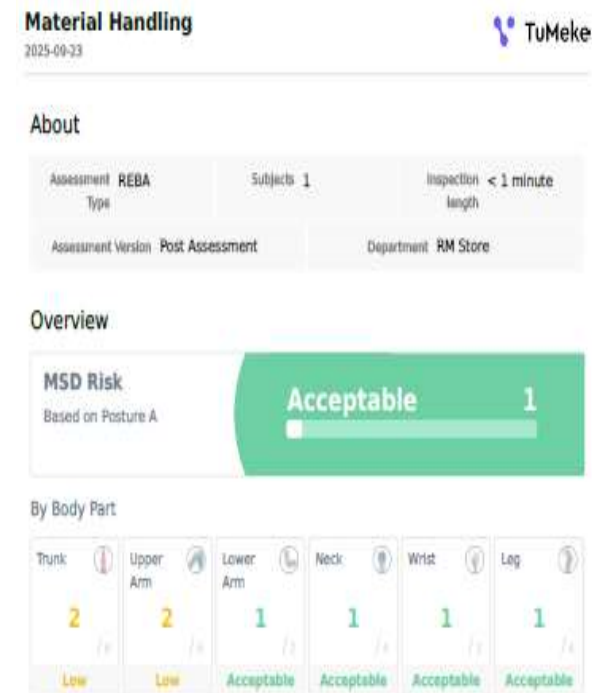
Photograph/Video



Description: Material Handling – While material handling by hand pallet the more stress came on the trunk, upper arm, neck and leg at the repetitive movement and ergonomically uncomfortable. During assessment it has been detected as high risk due to manual handling.

AFTER KAIZEN

Photograph/Video



Description: After Ergonomic risk suit assessment by the Ergonomic risk software, as per software recommendation manual pallets has been replaced by battery operated pallets and post assess. done. After modification assessment done and risk reduced from high to Acceptable.



Risk Assessment Calculation

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REBA Assessment Worksheet

Material Handling

Sep 23, 2025



A. Neck, Trunk and Leg Analysis

Step 1: Locate Neck Position



Step 1a: Adjust...

If neck is twisted: +1
If neck is side bending: +1

3

Neck Score

Step 2: Locate Trunk Position



Step 2a: Adjust...

If trunk is twisted: +1
If trunk is side bending: +1

3

Trunk Score

Step 3: Legs



2

Leg Score

Step 4: Look-up Posture Score in Table A

Using values from steps 1-3 above, locate score in Table A

6

Posture Score A

Step 5: Add Force/Load Score

If load < 11 lbs: +0
If load 11 to 22 lbs: +1
If load > 22 lbs: +2
Adjust: If shock or rapid build up of force: +1

2

Force/Load Score

Step 6: Score A, Find Row in Table C

Add values from steps 4 & 5 to obtain Score A. Find Row in Table C.

8

Score A

SCORES

Table A		Neck											
		1				2				3			
Legs		1	2	3	4	1	2	3	4	1	2	3	4
Trunk Posture Score	1	1	2	3	4	1	2	3	4	3	3	5	6
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	3	2	4	5	6	4	5	6	7	5	6	7	8
	4	3	5	6	7	5	6	7	8	6	7	8	9
	5	4	6	7	8	6	7	8	9	7	8	9	9

Table B		Lower Arm					
		1			2		
Wrist		1	2	3	1	2	3
Upper Arm Score	1	1	2	2	1	2	3
	2	1	2	3	2	3	4
	3	3	4	5	4	5	5
	4	4	5	5	5	6	7
	5	6	7	8	7	8	8
	6	7	8	8	8	9	9

Score A	Table C											
	Score B											
	1	2	3	4	5	6	7	8	9	10	11	12
1	1	1	1	2	3	3	4	5	6	7	7	7
2	1	2	2	3	4	4	5	6	6	7	7	8
3	2	3	3	3	4	5	6	7	7	8	8	8
4	3	4	4	4	5	6	7	8	8	9	9	9
5	4	4	5	5	6	7	8	8	9	9	9	9
6	6	6	6	7	8	8	9	9	10	10	10	10
7	7	7	7	8	9	9	9	10	10	11	11	11
8	8	8	8	9	10	10	10	10	11	11	11	11
9	9	9	9	10	10	10	11	11	11	12	12	12
10	10	10	10	11	11	11	11	12	12	12	12	12
11	11	11	11	12	12	12	12	12	12	12	12	12
12	12	12	12	12	12	12	12	12	12	12	12	12

9

Table C Score

1

Activity Score

REBA Score

REBA Scoring	
1	negligible risk
2 or 3	low risk, change may be needed
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B. Arm and Wrist Analysis

Step 7: Locate Upper Arm Position



Step 7a: Adjust...

If shoulder is raised: +1
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If arm is supported or person is leaning: -1

2

Upper Arm Score

Step 8: Locate Lower Arm Position



1

Lower Arm Score

Step 9: Locate Wrist Position



1

Wrist Score

Step 9a: Adjust...

If wrist is bent from midline or twisted: +1

Step 10: Look-up Posture Score in Table B

Using values from steps 7-9 above, locate score in Table B

1

Posture Score B

Step 11: Add Coupling Score

Well fitting Handle and mid range power grip	good: +0
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Score B

Step 13: Activity Score

- +1 1 or more body parts are held for longer than 1 minute (static)
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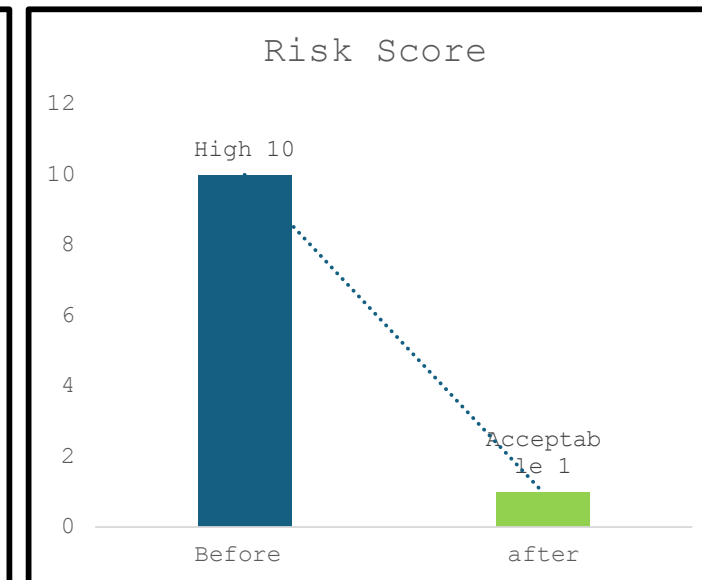
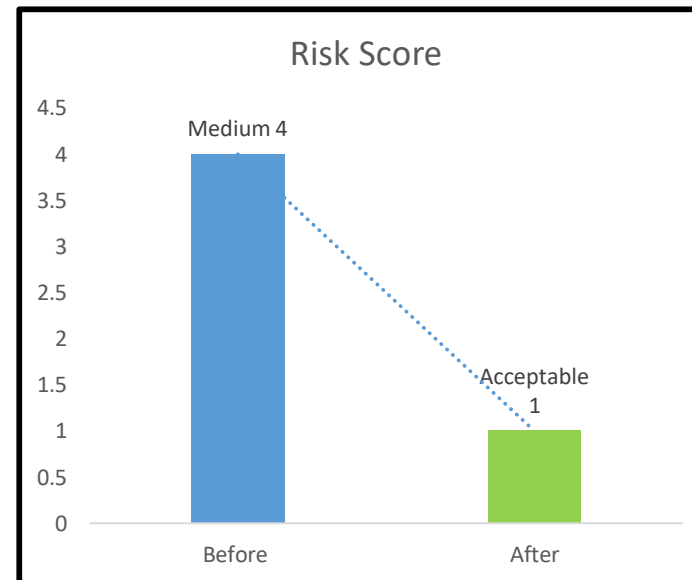
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Benefits

Pls tick ✓ the benefits in below heads

Productivity up %				Quality			Cost Saving In Rs/month		Delivery			EHS			
Process	Material yield improvement	Space saving (sq. ft.)	Other	Rejection reduction (%)	Poka yoke	Others	Direct	Notional	Lead Time reduction	Customer delivery rating improvement	Others	Effect on Environment	Human Safety	Machine safety	Others
			✓					✓					✓		

- Improved employee comfort and morale
- Reduced injury risk and absenteeism
- Increased productivity
- Compliance with ergonomic safety standards
- Cost Saving due to reduction in accidents





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Antifatigue Mats

To mitigate ergonomic risks associated with prolonged standing, anti-fatigue mats have been installed at all standing workstations. These mats help reduce leg, foot, and lower back fatigue by promoting micro-movements that improve blood circulation and support better posture, ultimately contributing to improved employee well-being and productivity.





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**Make your work area more
comfortable and productive**

Q & A



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THANK YOU