

Improvement of labour and environmental standards in Pakistan's textile industry (TextILES)

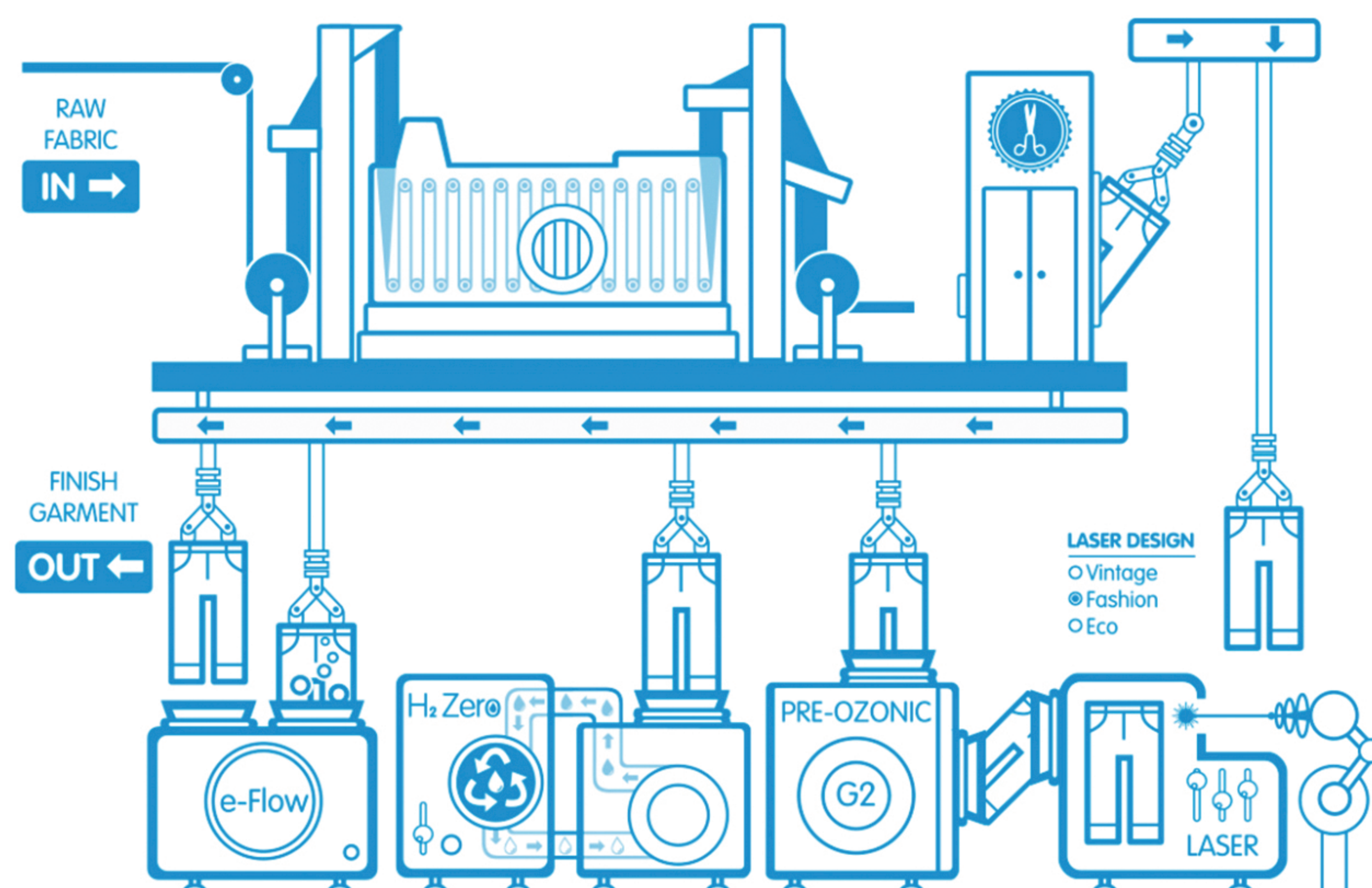
BUSINESS CASE STUDY ON ENVIRONMENT AND PRODUCTIVITY

AMBITION APPAREL

CONTEXT AND BACKGROUND

Ambition Apparel Limited (or "Ambition Apparel") is a fully integrated composite textile unit located at Glaxo Town, Ferozpur Road, Lahore which produces high quality cut-to-pack denim products (predominantly jeans, trousers, fashion pants, shorts, skirts and twill pants¹). It was established in the year 1999. Ambition Apparel is an export focused business, and works directly with a variety of major international brands including Zara, Primark, Splash, Next, Buhu and OVS. In terms of geography, a large portion of its business is with brands in the UK, followed by the rest of Europe, as well as a small share from buyers in the US as well. Its current headcount includes around 2,000 salaried staff and around 1,000 piece rate workers.

As of late 2022, Ambition Apparel produces around 20,000 garments per day, making the entity a medium sized export oriented unit by Pakistani standards. This case in particular showcases the company's journey with DfS following a baseline assessment in September 2021, through to the end of the intervention in August 2022. It points to how the learnings picked up are being internalized in its processes continually to improve productivity and environmental management practices going forward. Several positive externalities such as improved working conditions for workers and lower employee turnover were also realised.



[1]Source: Ambition Apparel Website (Accessible at: <http://www.ambition-apparel.com/corporate-summary.php>)

CASE SNIPPET

The case study researcher as part of the Abacus team visited Ambition Apparel to explore the outcomes of Dialogue for Sustainability (or “DfS”) based intervention by GIZ’s multiplier (NEC Consultants Private Limited or “NEC”), and assess its impact on the organisation. In terms of an overall impact assessment, it appears that the DfS intervention helped Ambition Apparel realise its pain points especially in terms of lower productivity vis-a-vis its competition, appreciate and identify wastages across its production processes, layout issues, identify gaps in productivity data recording, quality control related issues (including high defects per hundred units (or “DHUs”). From the data shared, and associated sessions with the DfS Change Management Team (or “CMT”), it appears that whilst the company managed to address several of these issues within the one year intervention. To address outstanding problems the company developed plans aimed at increasing organisational capacity. DfS enabled Ambition Apparel to realise the importance of self-help approach to enable continuous improvement and was the most significant win.

Whilst, DfS has also helped Ambition Apparel in its quest for achieving greater environmental sustainability in operations for which the entity had committed itself in 2018, several wins on the account may not be directly attributable to DfS. Ambition Apparel has realised major savings in electricity costs and usage through relatively minor investments in energy efficient lighting, fans, exhaust fans as well as the installation of a cooling system. This has not only reduced ambient temperatures on the stitching line by 5°C (peak summer months) but also help reduce turnover of seasoned workers (especially during peak demand periods). The company reported the overall outcome of DfS

intervention was positive and it is geared for growth in revenues and profitability, improved operations and working conditions as well as greater production efficiency. The CMT was able to successfully convince the senior management of the need to change and effectively tackle or manage change to become a more efficient entity going forward.

PROBLEMS AT AMBITION APPAREL

The following key productivity and environment related challenges facing Feature Fashion were identified at the baseline stage:

- Low output and productivity
- Inaccurate measurement of productivity and lack of data analysis for improvement
- High DHUs, change over times and quality related issues
- Line layout and machine movement issues
- Use of inefficient lights, fans, exhaust fans and air conditioners
- High ambient temperature
- Weak compressed air system and high leakages
- Usage of inefficient clutch motor on stitching machines

PRODUCTIVITY RELATED CHALLENGES

- **Low output and productivity:** Ambition Apparel’s average total daily output for FY2021 stood at around 11,709 garments per day, against an installed capacity of around 16,000 garments. Several contributors to this low output were identified, and came up in discussions between NEC and Ambition Apparel. These included a high proportion of idle

machines² and thus low machine utilisation. We understand that a total of 158 stitching machines were recently identified and even scrapped for a fraction of their value (PKR 700,000/- in total), which could have contributed to an additional installed capacity of 100,000 pieces per annum. Similarly, the existing auto-hemmer machine was lying idle due to non-servicing of a key part, and led to manual processing. This reduced productivity of labour to 250 pieces per day, less than a tenth of that offered by the auto-hemmer machine. The manual process also dictated a greater utilisation of skilled manpower and its associated costs. This also led to higher idle time and standard allowed minutes (SAM) on the stitching line, all of whom collectively contributed to lower output and productivity.

- Inaccurate measurement of productivity and lack of data analysis for improvement:** Productivity is by definition a measure aimed at calculating the efficiency with which resources are utilized to accomplish a desired result. Baseline study pointed out that the calculations utilized for measuring productivity were generally erroneous. This was down predominantly to the over-reliance on daily targets for productivity/efficiency calculations, and ignoring variances which were visible in the actual production achieved. The problem was worsened by departments not attributing responsibilities to relevant staff members to collect and analyse the variances. As a result actual production/efficiency data along with reasons explaining the variances against set targets was either being reported with a delay or not being recorded. Furthermore, even where data was provided, it was not actionable. A clear example as cited in the baseline assessment report was the over-reporting of cutting efficiency, which as reported in Ambition Apparel's data stood at 92.3% (for both stitching lines) and was much higher than

ing lines) and was much higher than that calculated by the NEC team (See Figure 1). Also, there appeared to be no comprehensive data management system in place to enable management to pin down the reasons explaining these variances and study these contributing factors in detail.

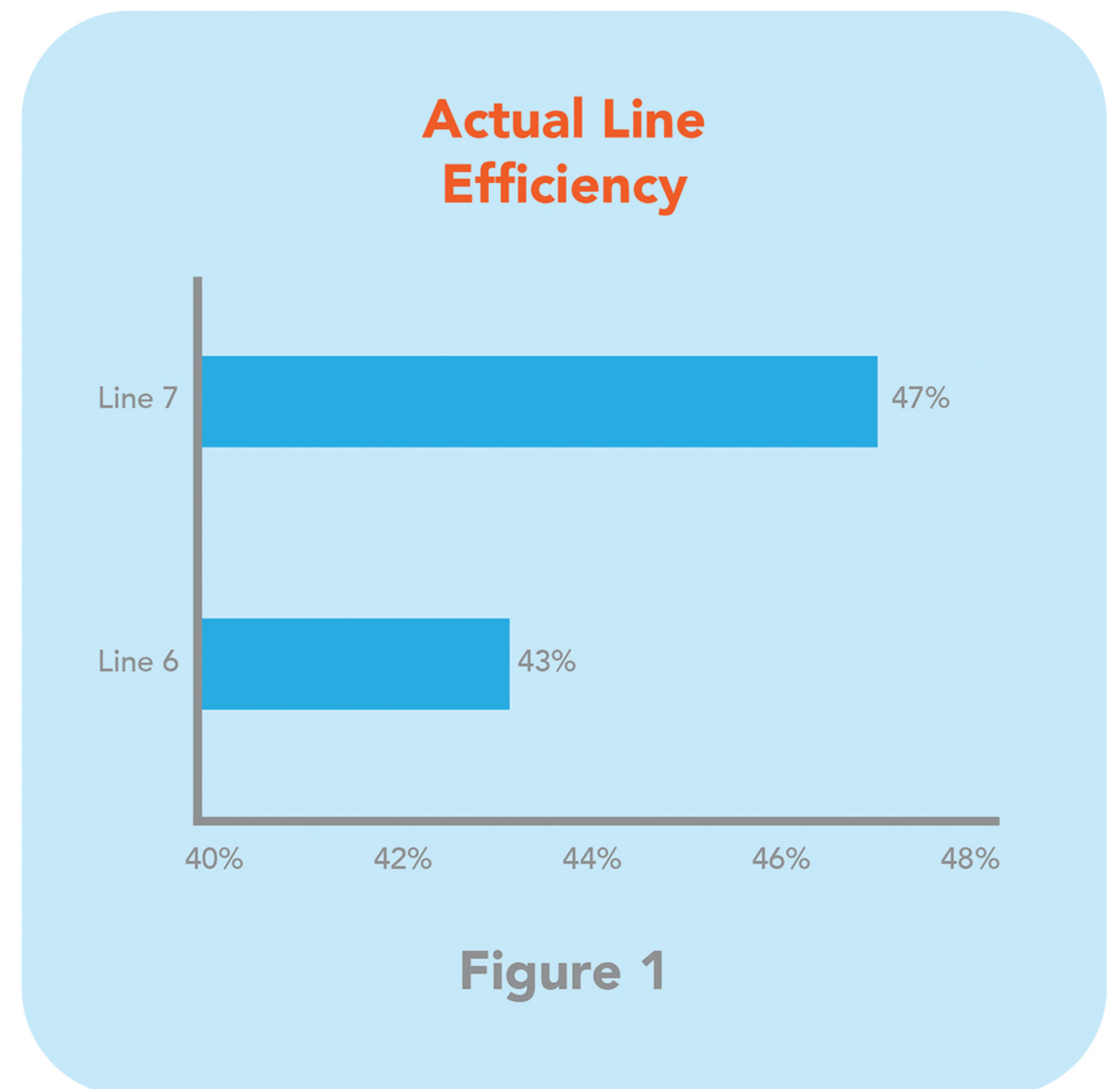


Figure 1

- High DHUs, change over times and quality related issues:** Whilst, the company remained committed to ensuring a high quality of product for its customers, the company found this to be difficult. End of line DHUs of 22% compared with an industry average of around 12% indicated the quantum of problem. The high DHUs also contributed to a high rework percentage. High rework came with its own set of challenges including a high B pair proportion and generally poor factory economics. All of these factors contributed directly to bottom line profitability. Ambition Apparel reported a changeover time of 10 hours compared to an industry average of 5 hours. By definition, "changeover time in a sewing/stitching line is the time taken from producing the last good quality piece of the com-

[2] Idle machines as defined herein refer to those machines, which have been taken out from the production floor for reasons impacting their serviceability. Machines scrapped by Ambition Apparel could not be economically restored, due to the costs involved (including spare parts and labour availability).

pleted style to the time taken in producing the first good quality piece for the new style. It accounts for incorporation of all operations (including the time taken to set-up any new machinery or its exclusion), to facilitate the production of a new style of product³. The high changeover time at Ambition Apparel was indicative of the fact that the factory's stitching lines (specifically 6 and 7) were varying between products of different specifications and requirements and in smaller batches. This in particular is a rather inefficient mechanism and contributes to the lower productivity and efficiency as well.

■ **Line layout and machine movement issues:**

The line layout of the stitching line was deemed to be inefficient. The figure below shows the layout of the top floor at Ambition Apparel's Glaxo Town plant. The diagram shows both lines 6 and 7, and as per the data shared, the image indicates that one machine previously occupied around 124 square feet (sq. ft.), and the available machines across both lines could produce ~4,000 pieces per day.

Placement of Front and Back QC Sections (Before DfS Intervention)



Figure 3

Another area of concern around layout issues was the joint placement of quality control (QC) desks for both front and back sections for lines six and seven. This contributed to difficulties in case of rework and translated into a per movement time of 120 s (2 min). Based on eight rounds, this extrapolated to around 32 min of time wasted per day, which had a daily cost contribution of PKR 368/- per day. The figure above lays this issue diagrammatically. Another problem was the inefficient machine movement deployed to shift between the different machine layouts. Typically, stitching line layouts are changed to cater to the varying styles of products and this effects placement of sewing machines. Placement depends on whether the layout is product-based or process-based⁴. To facilitate this, movement two helpers manually transported machines to their new required place. This not only led to loss of productive time of two individuals but also had the potential of damaging the stitching machine itself or its respective stands. The probability of the machine or its stand being damaged was noted to be as high as 40%, and an additional labour

Line Layout Problems

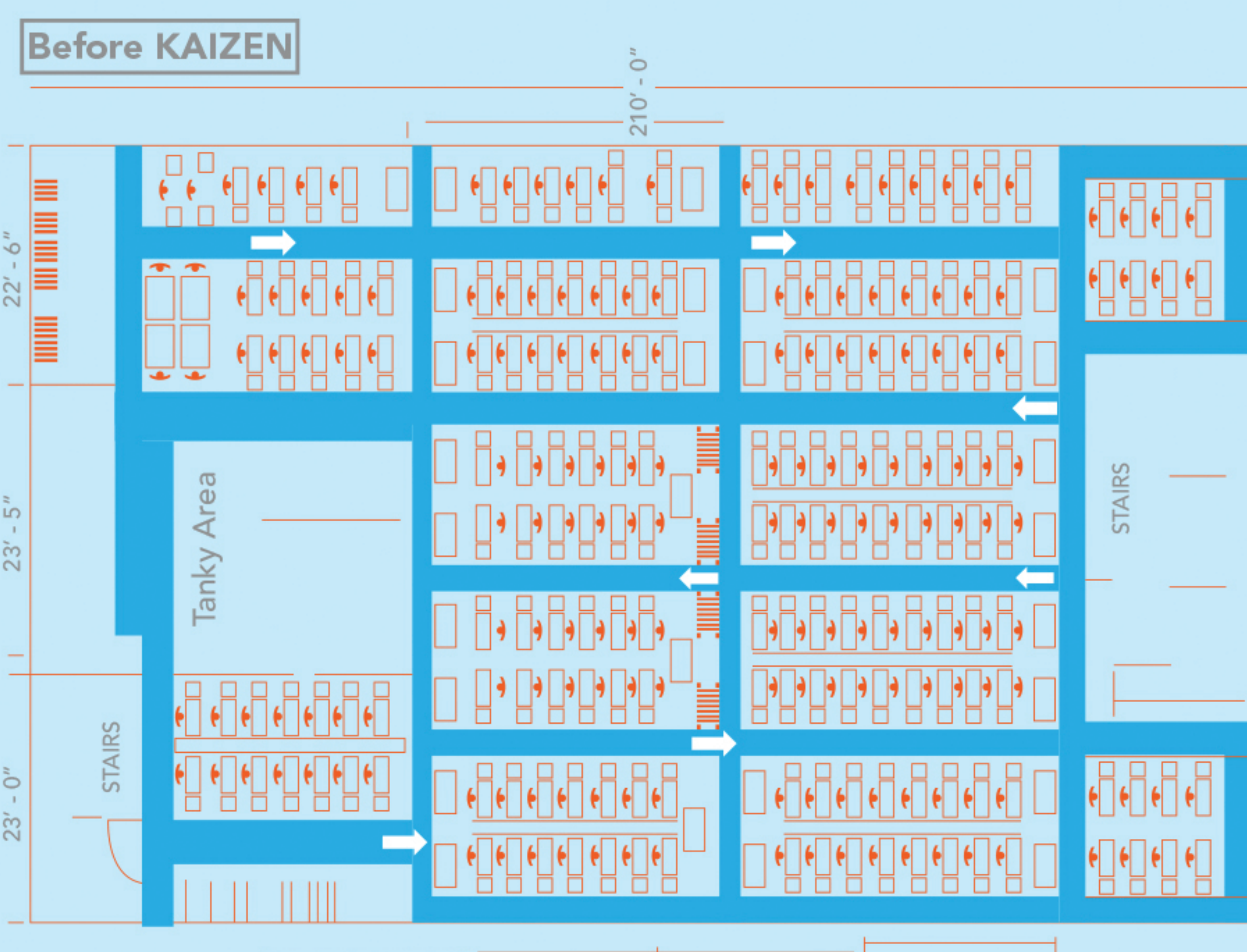


Figure 2

[3] Source: "Changeover time calculation in sewing line", Sanadhya.V (2018). (Accessible at: <https://lean-stitch.com/changeover-time-in-sewing-line/#:~:text=Changeover%20time%20in%20sewing%20line,piece%20for%20the%20new%20style>)

[4] Source: Different Machine Layouts in Sewing Line, Jana. P (2009). (Accessible at <https://apparelresources.com/business-news/manufacturing/basics-of-machine-layout-in-sewing-line/>)

labour charge of around PKR 50,000 per month was being incurred.

Machine Movement Practice at Ambition Apparel (Prior to Intervention)



Figure 4

ENVIRONMENT RELATED CHALLENGES

- **Use of inefficient lights, fans, exhaust fans and air conditioners:** Total electricity consumption was not available at the time of the baseline study. It was noted that Ambition Apparel had not installed energy sub meters for different departments which made it impossible to get data for department wise electricity consumption. Additionally, the factory was using fluorescent tube lights on the shop-floor, inefficient ceiling fans and exhaust fans. It was also found that traditional air conditioning units were installed at key offices across the factory. The table below provides a breakdown by type of installation, its numbers and power consumed for ease of reference.

Table 1: Power Consumption by Installations

Type of Installation	Number Installed	Power Consumption Watts	Cost of Power Consumed PKR/month
Tube lights	1,010	40,400	262,600
Ceiling Fans	625	62,500	406,250
Exhaust Fans	9	13,500	87,750
Air Conditioners	60	90,000	585,000
Total		206,400	1,341,600

Source: Ambition Apparel – Utilities Department

- **High ambient temperature:** During the third CMT workshop, Ambition Apparel's CMT team identified that the high ambient temperature, reportedly of 32°C, during peak summer months on stitching line 6 and 7 contributed to unfavourable working conditions and high worker turnover. Whilst the top floor's ceiling was at a height of 22 ft. and was deliberately kept high to facilitate a better working environment and did not completely address the problem.
- **Weak compressed air system and high leakages:** Compressed air was used in fedo machine, safety machine, eyelet machine, fusing machine and stain removal area. In order to meet the compressed air demand two old technology compressors of 65kW and 50kW installed capacities, were installed at Ambition Apparel. It was observed that compressors operated on fixed speed and had no auto drain valves installed at the bottom of compressed air receiver tanks, which was in contrast to energy efficient practices. Also, compressed air system dryer was not working and allowed moisture to

be mixed with compressed air in the distribution network resulting in damage to the air pneumatic assemblies. The oil separator was also not working optimally, due to which oil was observed in the system. Additionally, leakages were identified at 21 different points in the compressed air system, which collectively contributed to an annual loss of 71,928 m³ of compressed air.

- **Usage of inefficient clutch motor on stitching machines:** Ambition Apparel representatives identified that the use of clutch motors was universal across all nine stitching lines. Clutch motors by definition run constantly when the sewing machine is turned on, whereas the servo motors do not work until the pedal is engaged by the machine operator. A single clutch motor installed at Ambition Apparel was found to be consuming ~160W of electricity in idle running. Servo motors are typically around 90% more efficient as compared to clutch motors⁵. Discussion with the Utilities team reveals that this number was around 800 machines (idle running costs per month – approximately PKR 832,000).

JOURNEY WITH DfS

Post the baseline assessment a 13 member CMT was formed comprising of relevant individuals from Ambition Apparel's health safety and environment (or "HSE"), industrial engineering (or "IE"), quality, and stitching and washing departments. To support the main CMT, mini-CMTs were also formed to implement action plans developed at main CMT for on-site implementation. A total of 5 CMTs were attended by representatives of Ambition Apparel and a number of problems identified and addressed by the end of intervention in August 2022. IE head was selected to lead

the DfS intervention from Ambition Apparel's side.

INTERVENTIONS AT AMBITION APPAREL

The DfS intervention was largely successful in helping Ambition Apparel address the areas of improvement identified in the baseline assessment. These interventions and the results indicating improvement from the baseline stage are discussed below.

PRODUCTIVITY AND QUALITY INTERVENTIONS

During discussions with the Ambition Apparel team, it was clear that realisation of the low hanging fruits facilitated by DfS changed the overall thought process to one which is appreciative of lean practices, waste minimisation and greater efficiency. Some of the interventions and results are discussed herein:

- **Increase in output and productivity:** A number of initiatives undertaken by the CMT team led to Ambition Apparel increasing its production from around 11,709 to around 20,000 garments per day (71% increase). These initiatives were undertaken based on their learnings from multiple CMTs. These included: greater use of automated machinery such as auto-hemmer machine and induction of additional automated machines. As a result, overall efficiency measured by minutes produced over minutes available went up from 74% in October 2021 to 83% at the end line. Auto-hemmer machine was operationalised post the third CMT and helped Ambition Apparel save up ~ PKR 557,000 per month (predominantly due to a lesser requirement on labour and its associated costs). This saving translates into a reduction in cost per

[5]Source: Penang Sewing Machine

garment of 85% (PKR 2.20 to 0.33).

Total Cost Saving Per Month (PKR)

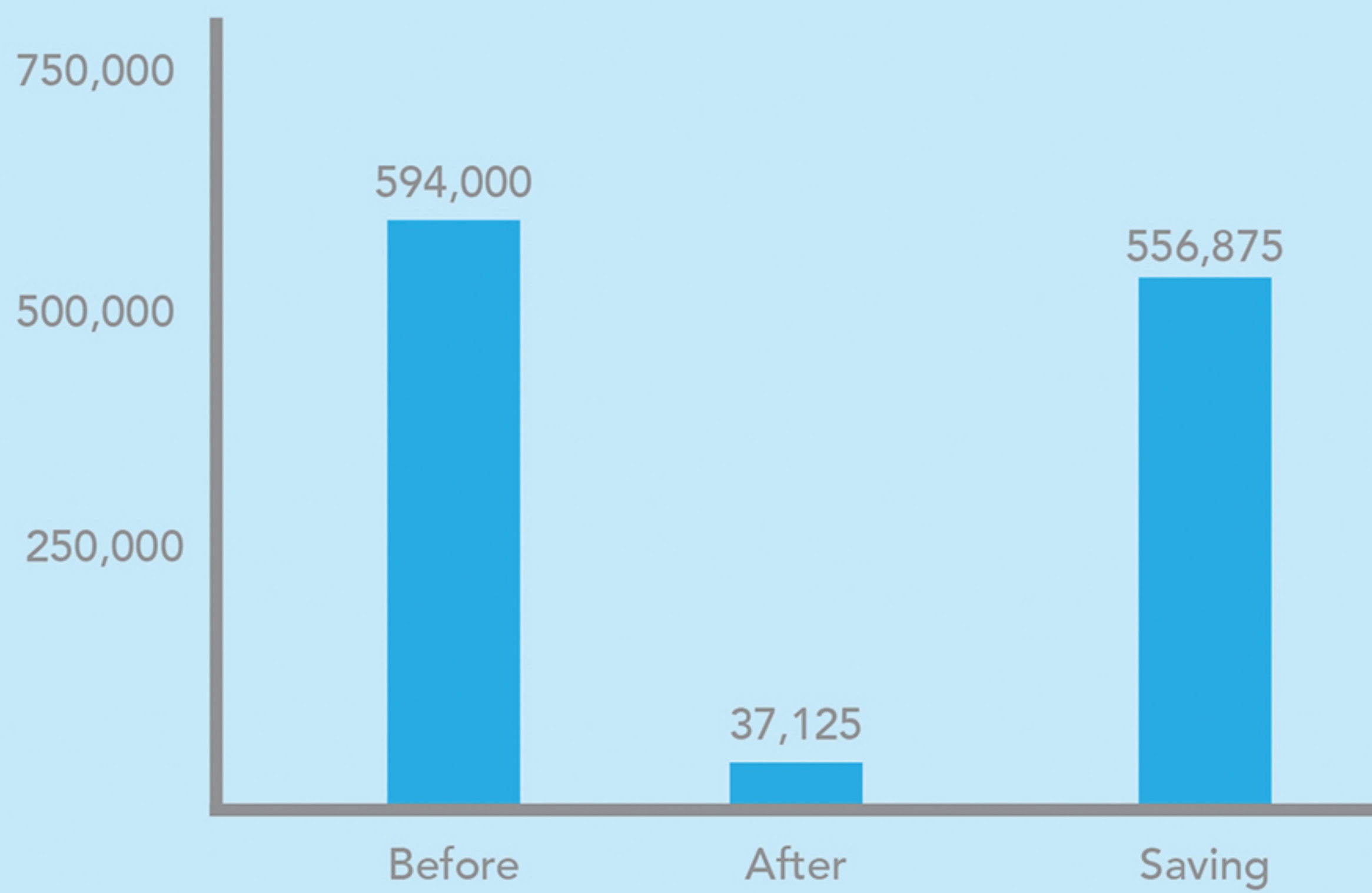


Figure 5

Cost per Piece (PKR)

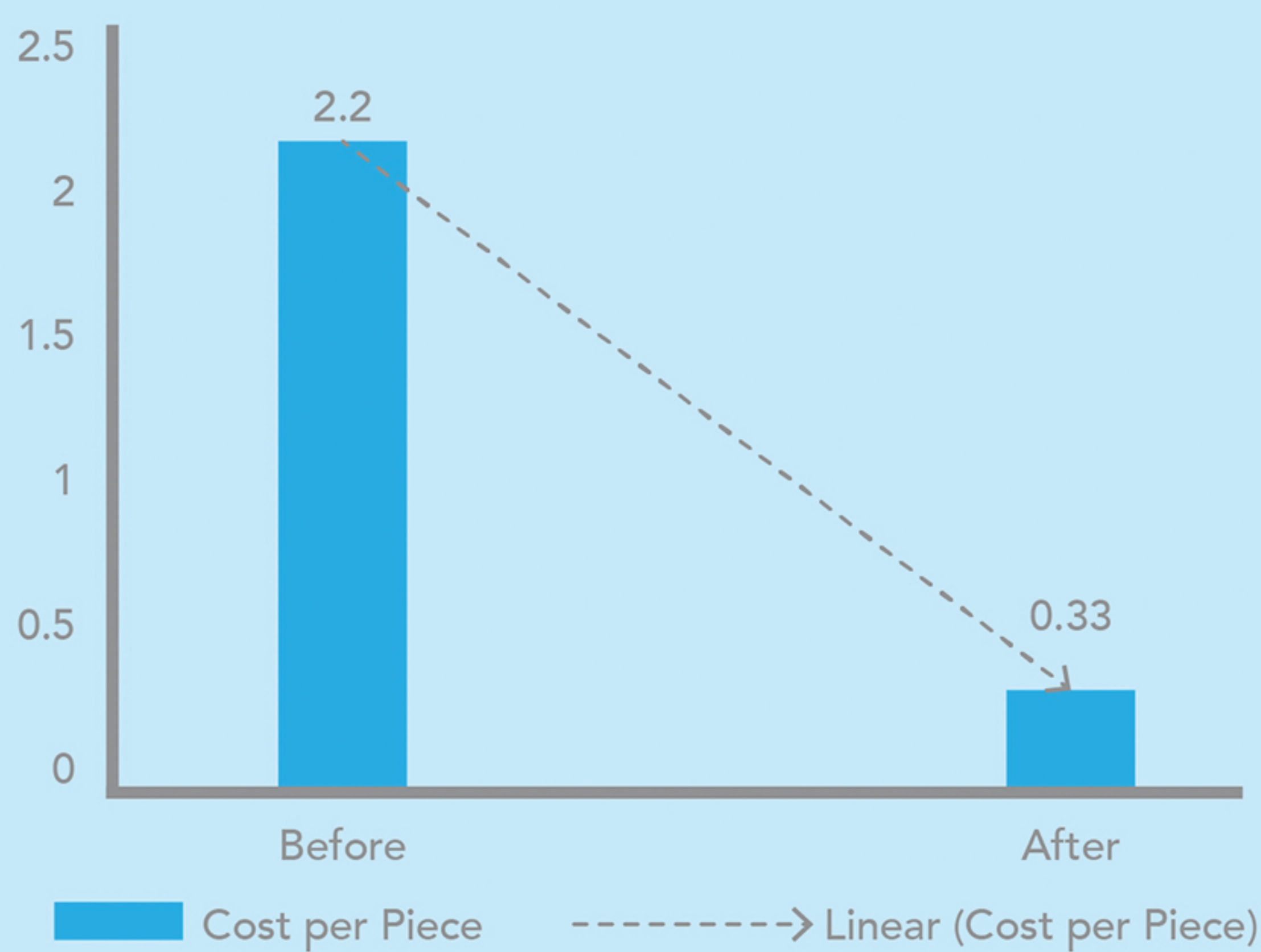


Figure 6

Ambition Apparel has also invested ~ USD 72,000 in capital expenditure for procuring the following machines for its stitching lines:

Table 2: Sewing Machines Induction in Stitching Line

Type of Machine	Quantity	Type of Machine	Quantity
Automatic Pocket Setter	2	Fedo	1
Automatic J Stitch	1	Automatic Serging Machine	1
Bottom Hemming	2	Automatic Belt Loop	2

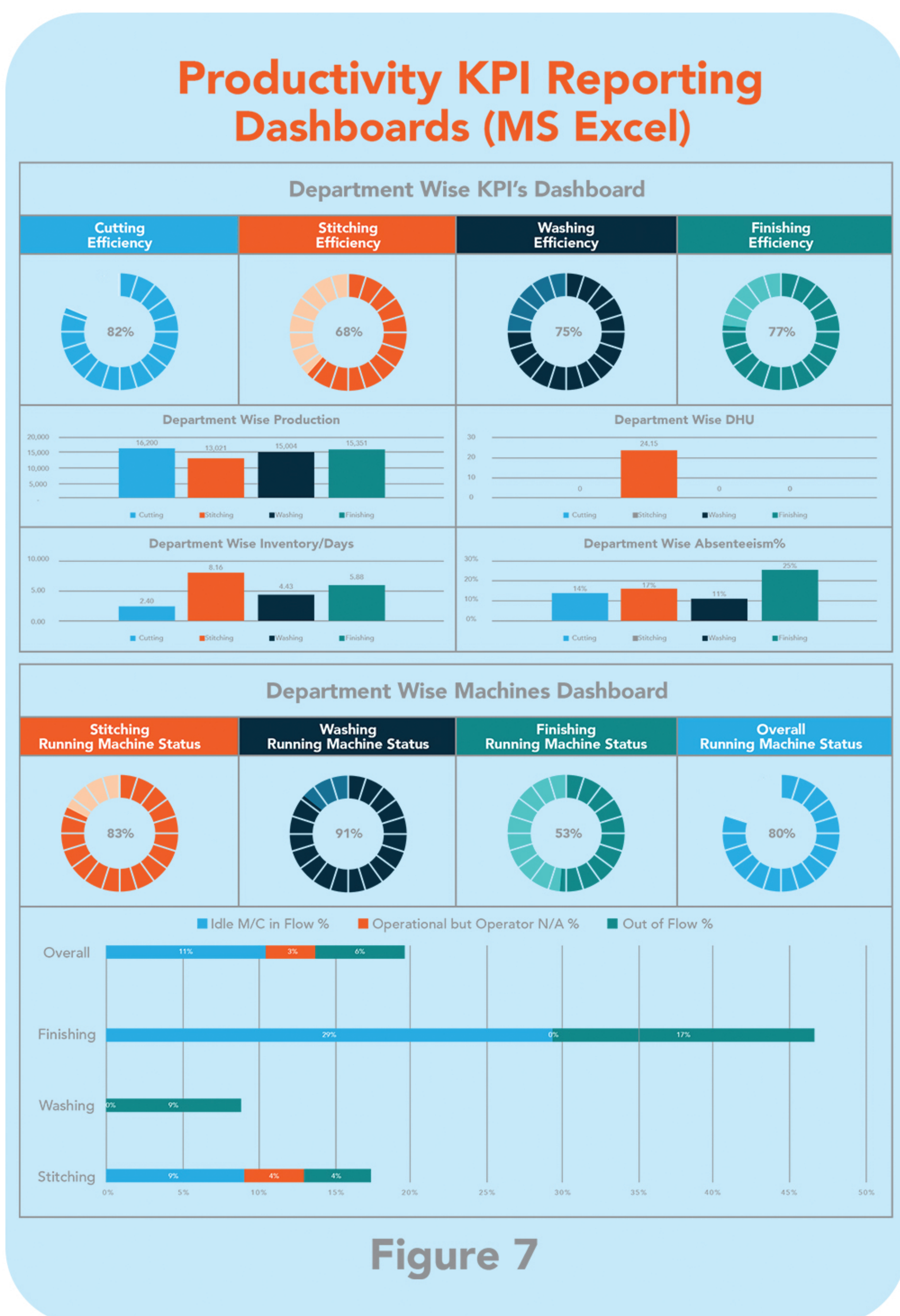
Source: Ambition Apparel IE Team

These machines are expected to arrive in January 2023 and operationalised shortly thereafter. It is expected that productivity and output shall increase further post the induction. Just for reference, automatic pocket setter helps reduce SAM by 2-3 minutes, which helps reduce production costs per garment by approximately PKR 60-65. This cumulatively contributes to greater profitability, lower costs and more competitive pricing.

- Periodic data recording management and analysis:** The DfS led intervention has helped Ambition Apparel recognise the importance of accurately recording, managing and monitoring data points related to productivity and quality. The CMT was able to correct the issues with inaccurate definitions around data points of efficiency and productivity through trainings delivered at CMT and mini-CMT levels. Display boards were added on each floor showcasing hourly targets for each line along with measurement of attendance, absenteeism and work-in-process inventory. This is a 6S learning and has been further improved by the company developing multiple dashboards using MS Excel and carrying out frequent reporting of multiple

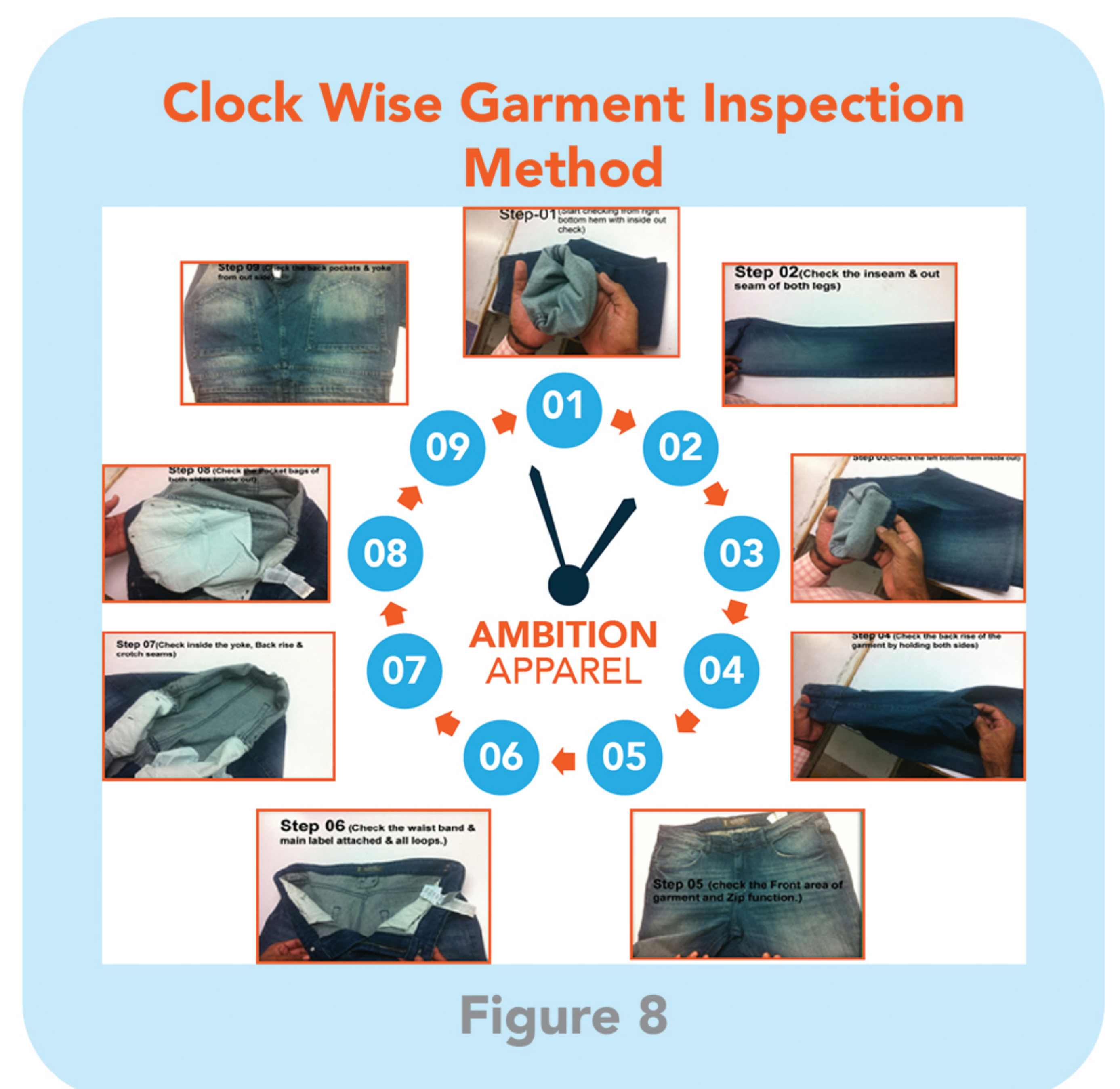
KPIs. The system is currently heavily reliant upon manual data input by various stakeholders. Nonetheless, it appears that there is a concerted effort organisation wide to ensure the system's smooth operation.

The senior management in particular has been empowered to access areas of concern and develop strategies on a timely basis to address the problems for e.g. visibility on machine downtime helps not only identify the line, location and reason for downtime but also appropriates responsibility to the concerned department or the maintenance team. This visibility to the higher ups ensures that the delays are not continuous and machinery is not damaged purposely beyond repair (a common occurrence before the DfS intervention). Some snippets of the dashboards are included below for easy reference.



The system developed has also allowed improving production planning as daily targets are assessed against actual achievements and variances analysed in-depth.

- Improvement in quality, decline in DHUs and change over time:** Quality control is a very important aspect of production at Ambition Apparel, especially post the DfS intervention. The focus of the QC department is on the continual improvement of its processes and maintaining highest quality of standards for all its merchandise. The company ensures that most qualified and trained personnel are hired in this department, with regular training being conducted for the entire quality department. To further improve quality inspection at Ambition Apparel, the DfS intervention helped introduce a clockwise garment inspection method. The 9 steps of clockwise garment inspection were as follows:



1. Start checking from right bottom hem with inside out check
2. Check the in seam and out seam of both legs
3. Check the left bottom hem inside out

4. Check the back rise of the garment by holding and yoke from out side
5. Check the front area of the garment and zip function
6. Check the waist band, main label attached, and all loops
7. Check inside the yoke, back rise, and crotch seams
8. Check the pocket bags of both sides inside out
9. Check the back pockets and yoke from out side

Gemba Walk Ground Rules

We **FRESH** our minds at daily Gemba

ہم ڈیلی گیмба میں اپنے ذہنوں کو تازہ کرتے ہیں۔

- 1- Focus Process
- 2- Respect All
- 3- Engage All
- 4- Seek Learning
- 5- Help Front Line

"Improvement is our Daily Business"

Figure 9

The clockwise garment inspection method has helped reduce rework and DHUs. Gemba Walk has also been incorporated at Ambition Apparel's stitching lines. The primary objective is to understand the value stream and its problems by reviewing the actual process, understanding the work, asking relevant questions and learning from those who perform the actual work. It helps identify wasteful activities by taking a break from day to day tasks to walk the floor of their workplace⁶.

One of the measures aimed at improving quality also included improvement in bartack sewing machines. This also helped in saving costs by

reducing over processing waste as extra thread from bartack machine was minimised. This resulted in daily saving of PKR 24,806/- or PKR 0.64 million per month.

Minimization of Extra Thread

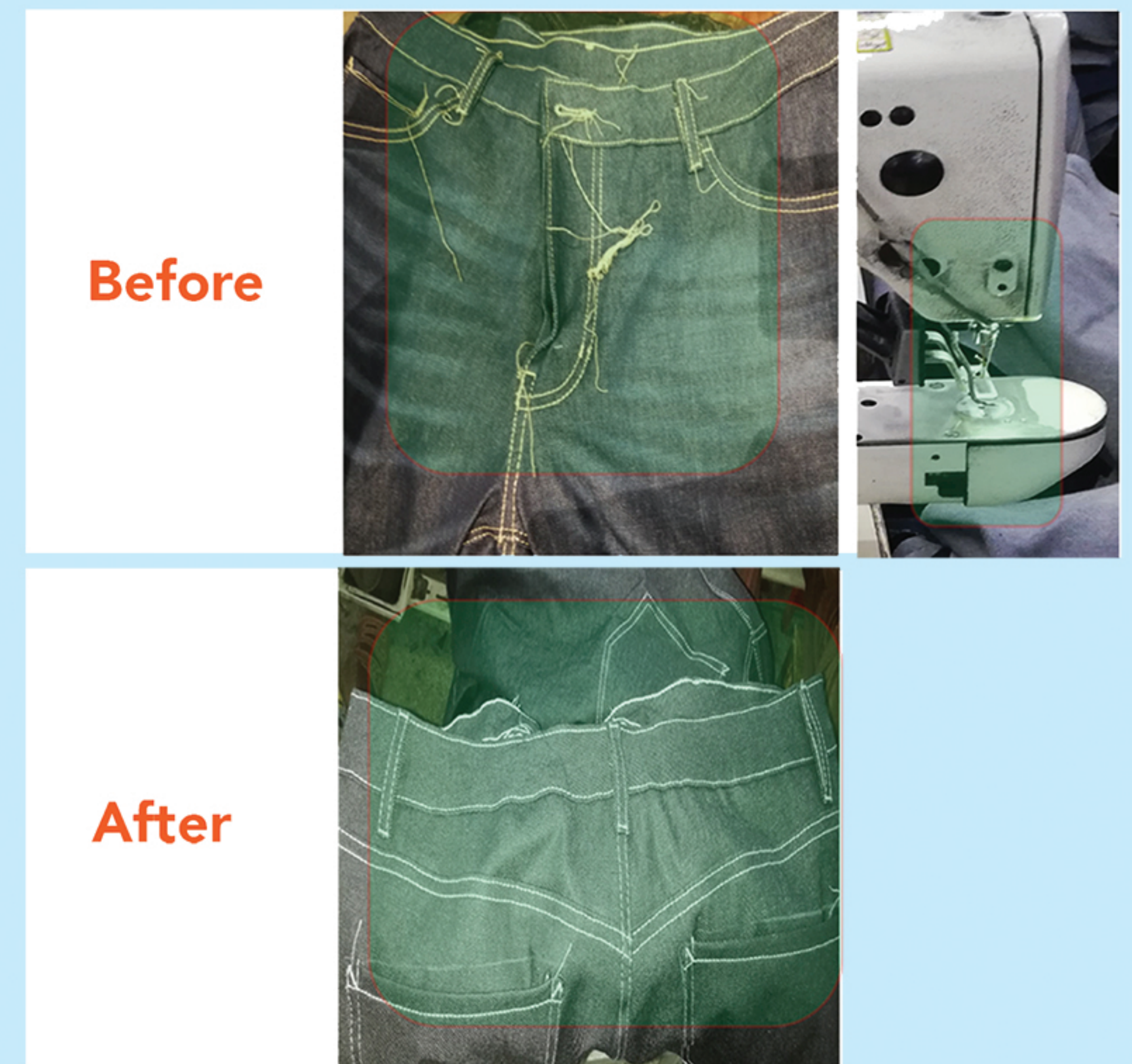


Figure 10

Post the DfS intervention, DHUs are down to around 14% (as of June 2022) and have reportedly slipped further down. Whilst data on rework percentage and defectives was not shared, we understand that there is a significant downward movement in the same.

In order to address the problem related to high change over time, Ambition Apparel applied another key lean learning of Single-Minute Exchange of Die (or "SMED"). SMED by definition is a system aimed at "dramatically reducing the time it takes to complete equipment changeovers. The essence of the SMED system is to convert as many changeover steps as possible by moving them externally to the line, and to simplify and streamline the remaining steps"⁷. A fashion module to separate all tasks pertinent to fashion operations was developed. This helped externalise all associated non-core activities for the stitching line. As of December

[6] Source: Gemba, Lean Six Sigma Definition (Accessible at: <https://www.leansixsigmadefinition.com/glossary/gemba/>)

[7] Source: SMED (SINGLE-MINUTE EXCHANGE OF DIE), Lean Production (Accessible at: <https://www.leanproduction.com/smed/>)

2021, 22 processes have been externalised from the stitching line from 14 processes as of October 2021. Improved production batches was also incorporated as a key learning. Cumulatively, incorporation of SMED and better production planning has helped Ambition Apparel drastically reduce its change over time by 50% (**Figure 11**) and meeting industry average.

Change Over Time (Hours)

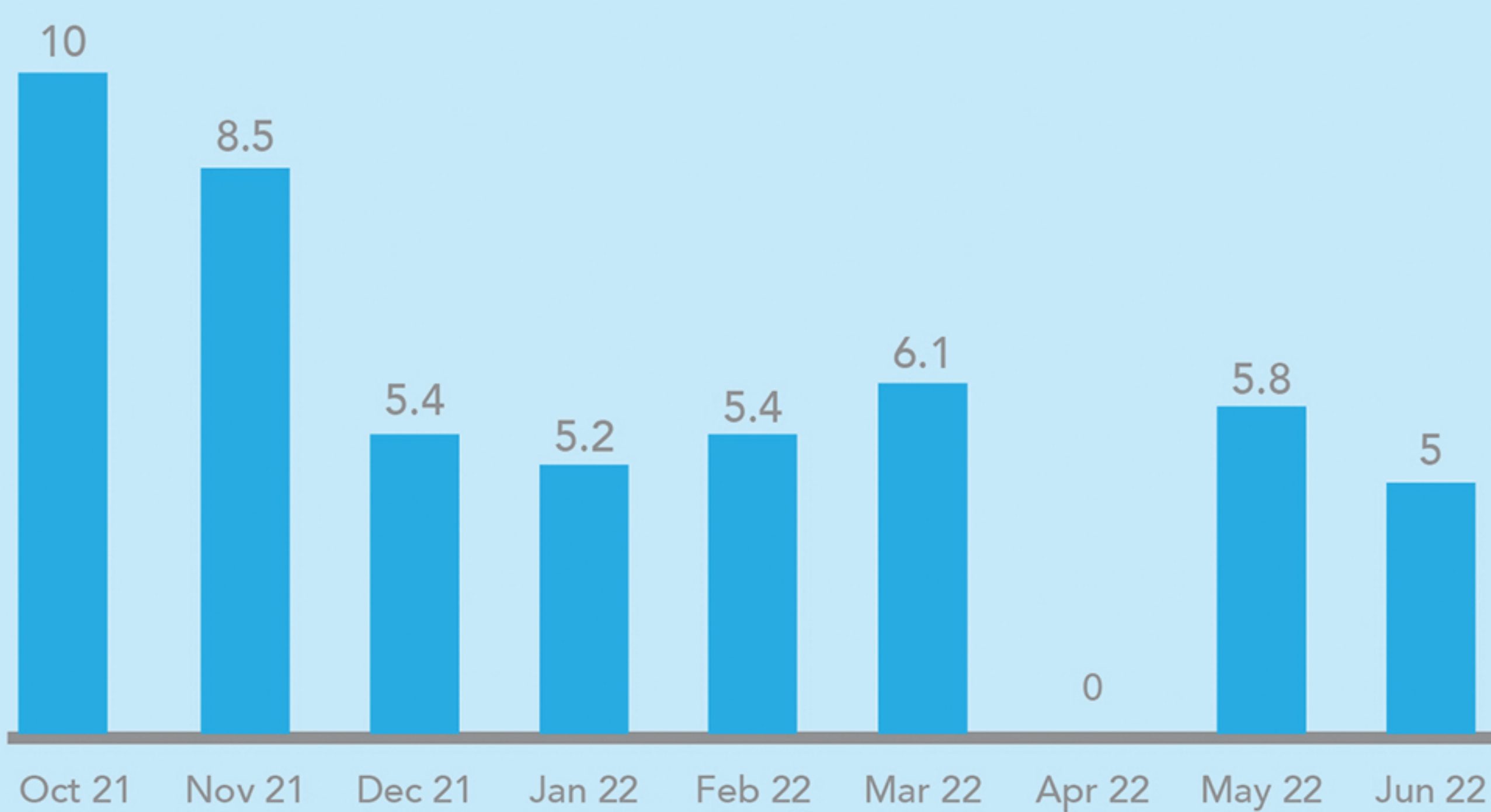


Figure 11

earlier 120 sec (79% improvement) and has also removed the need for transporting rework items over significant distances. This means that the available time of the line staff has also been improved. In terms of a financial impact, a daily cost saving of PKR 218/- has been realised which when extrapolated on an annual basis, translates to a saving of PKR 0.68 million.

Unification of Line 6 and 7 and Change in Layout

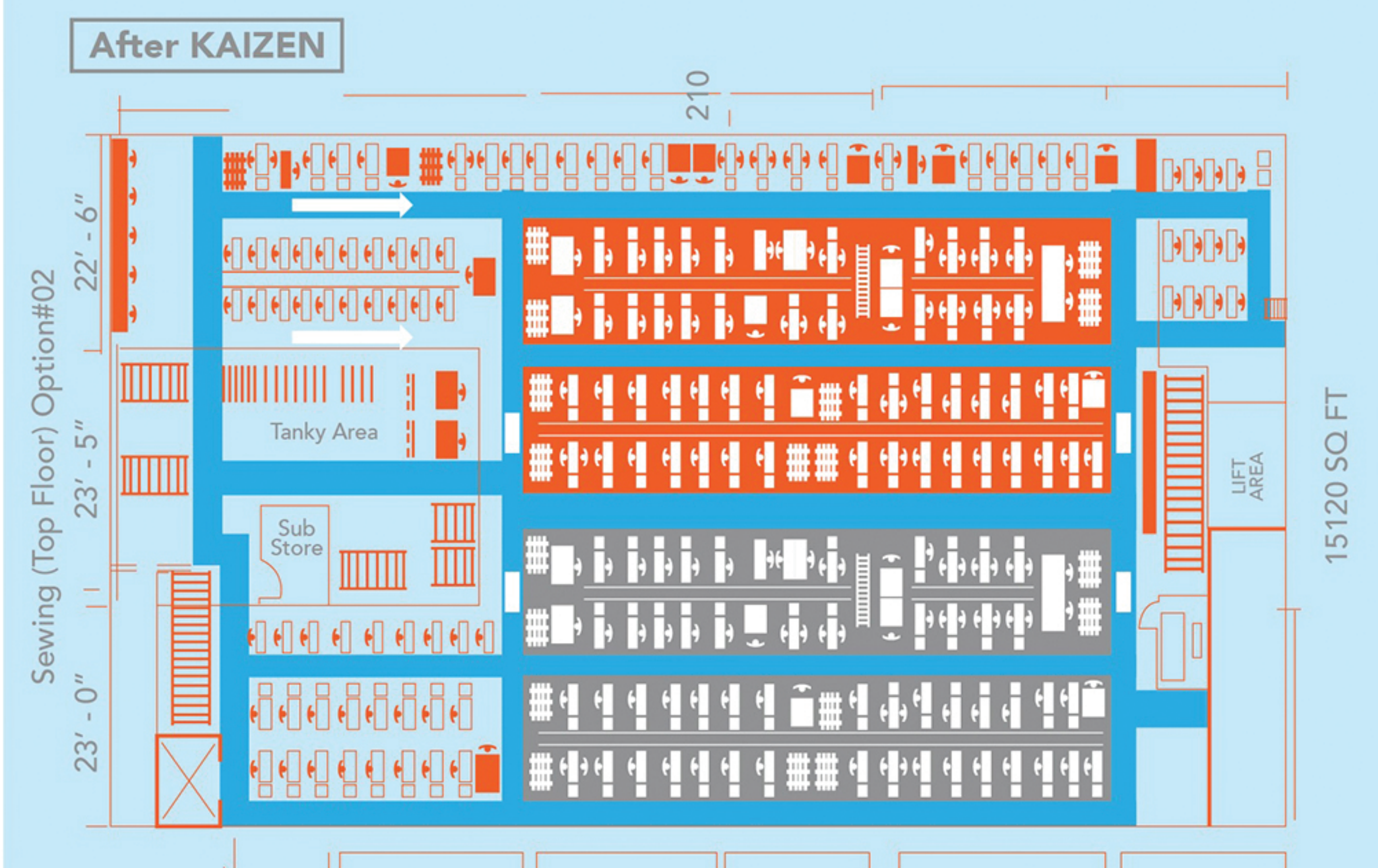
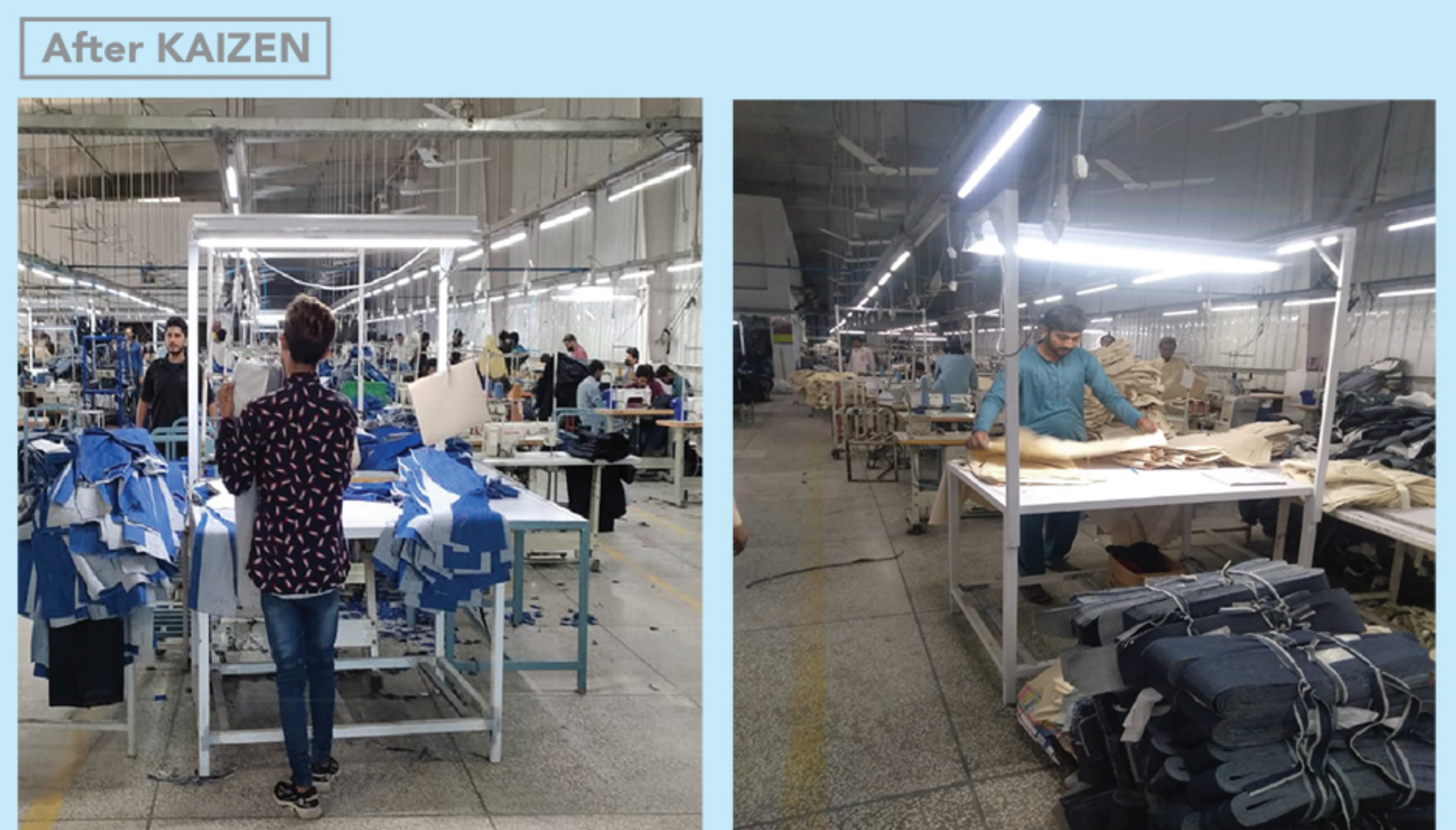


Figure 12

- Changes in line layout and improvements in machine movement:** Measures aimed at reduction of transportation waste, led to unifying line 6 and 7 and changing the floor layout. The move was facilitated as a VAT on productivity which helped CMT with undertaking this change. Post the reengineering; a 25% improvement from the baseline in terms of pieces produced and per day profitability was witnessed. Area available per machine was also reduced from 124 to 90 sq. ft. (approximately 30% improvement) allowing the company to fit in more machines in the same space.

Change in Position of Front and Back QC



Front QC

Back QC

Figure 13

Another layout related improvement pertains to change in the position of QC sections for both front and back sections. This has reduced the time taken per movement to 25 sec from an

Improved Machine Movement

After KAIZEN



One Person Move the Machine

Figure 14

Continuing further with the application of lean/Kaizen learnings the IE team facilitated by the maintenance staff was able to fabricate a trolley from a scrap metal pipe. This helped develop a platform to safely transport sewing machines across multiple lines to facilitate changeovers. The trolley is capable of being operated by one resource and also reduces the high probability of damaging the machine or the stand it is to be placed on. Quantitatively, machine transportation time declined by 15%, reduced risk of damaging machine or stand by 87%, 50% reduction in required manpower and a saving of PKR 0.24 million annually.

ENVIRONMENT INTERVENTIONS

Ambition Apparel's appreciation of measures aimed at improving environmental sustainability is evident from the organisation's sustainability initiative launched in 2018 under which a comprehensive plan was developed to improve the internal capacity on the subject. A four year growth timeline of the plan reveals that the firm wished to upgrade key machinery, acquire LEED certification, setting up of a biological effluent treatment plant (ETP)

and contribute to achieving sustainable development goals set for Pakistan. The DfS intervention on environment helped compliment this plan and further the sustainability drive. Some of the interventions undertaken as a result of the DfS intervention by Ambition Apparel are discussed hereunder.

- **Installation of Cooling Tower/Chiller on Top Floor:** Installation of cooling tower to normalise working conditions on line 7 as suggested in the action plan was carried out. An evaporative cooling system with an installed capacity of 25KW/h was installed at a cost of PKR 4 million. An amount of ~ PKR 1.77 million was realised as savings as a result of this investment. Majority of these savings were down to reduced employee turnover which fell to 8% (for line 6 and 7) from 20% prior to this intervention. Beyond a measure of improving environmental sustainability this initiative helped address an issue plaguing HR as well as social compliance and therefore was a triple win for Ambition Apparel made possible by DfS.

Cooling System Sewing Top Floor

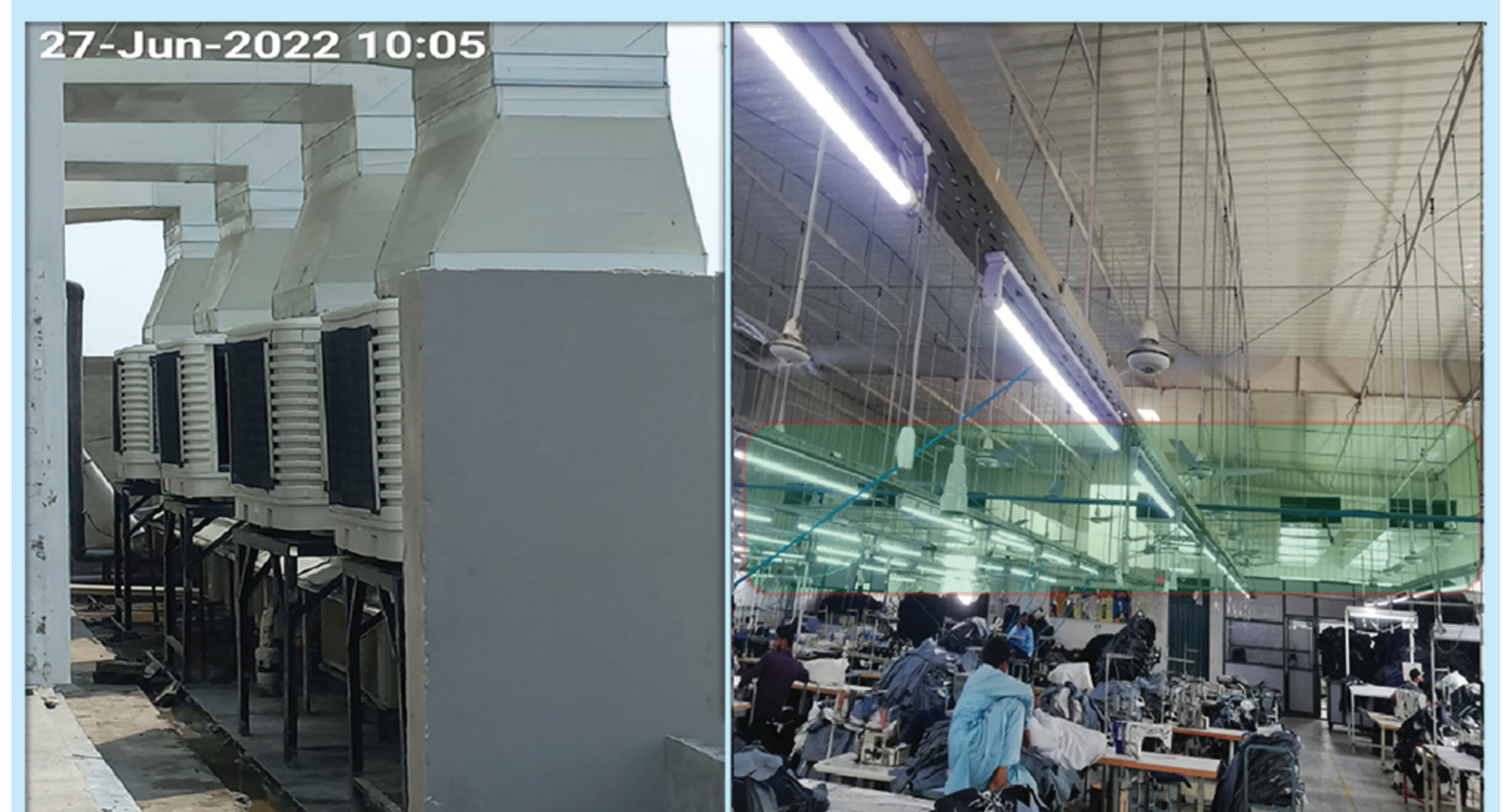


Figure 15

■ **Installation of Energy Efficient Lights, Fans, Exhaust Fans and Air Conditioners:** Installation of energy efficient equipment on this account helped Ambition Apparel bring this expense down by a significant 52%. A total capital expenditure of PKR 13.3 million was spent on this account and included installation of inverter air conditioners to replace traditional units, energy efficient ceiling and exhaust fans and high lumen LED lights across the shop-floor to replace the traditional/non-energy efficient ones. A breakdown of the new equipment installed, cost of power consumed and savings in terms of PKR per month against the baseline is presented in the table below.

Table 3: Power Consumption by Energy Efficient Installations

Type of Installation	Power Consumption Watts	Cost of Power Consumed PKR/month	Savings PKR/month
Tube lights	18,180	118,170	144,430
Ceiling Fans	30,000	195,000	211,250
Exhaust Fans ⁸	6,750	43,875	43,875
Air Conditioners	45,000	292,500	292,500
Total	99,930	649,545	692,055

Source: Ambition Apparel – Utilities Department

■ **Installation of Efficient Variable Speed Drive (VSD) Air Compressor System:** A DfS intervention aimed at addressing the weaknesses in the air compressor system was the installation of a 75kW VSD air compressor system. This replaced one of the 50kW older air compressors and ensured that an average pressure of 7 bars

(maximum available of 8.5 bars) of compressed air was available to the machines in the stitching and finishing lines. Additionally, an older 65kW system was kept for redundancy.

■ **Installation of Energy Efficient Servo Motors:** A total of 800 servo motors were installed across Ambition Apparel’s stitching lines post the DfS intervention. The installation of these servo motors has contributed to a saving of PKR 14 million. Most of this saving can be attributed to elimination of idle time running offered by servo motors.

WAY FORWARDS

PRODUCTIVITY INITIATIVES

Post DfS intervention, the importance of recording, measuring and managing data for productivity improvement has been a key learning for Ambition Apparel. The company now actively records multiple data points for improved oversight and management using MS Excel. The dashboards developed require manual input of data by multiple stakeholders to effectively operate and despite being a significant step up from pre-DfS have a significant room for improvement going forwards. Continuing with this learning, the management has initiated work on a PKR 9.3 million investment for a suite of RFID enabled technologies by WiMetrix – an industrial intelligence tool. WiMetrix offers five distinct technology solutions namely RFID Roll Tracking (RRT), Smart Production Tracking System (SPTS), Smart Quality Management System (SQMS), Bluetooth based garment measuring system (Measure Pro) and Machine Efficiency Monitoring System (MEMS). The system clearly offers a way towards adoption of industry 4.0 technologies for Ambition Apparel and will help the organisation further improve its productivity and quality.

[8] Ageing local exhaust fans from Bilal Engineering replaced by imported exhaust fans from Munters Italy

ENVIRONMENT INITIATIVES

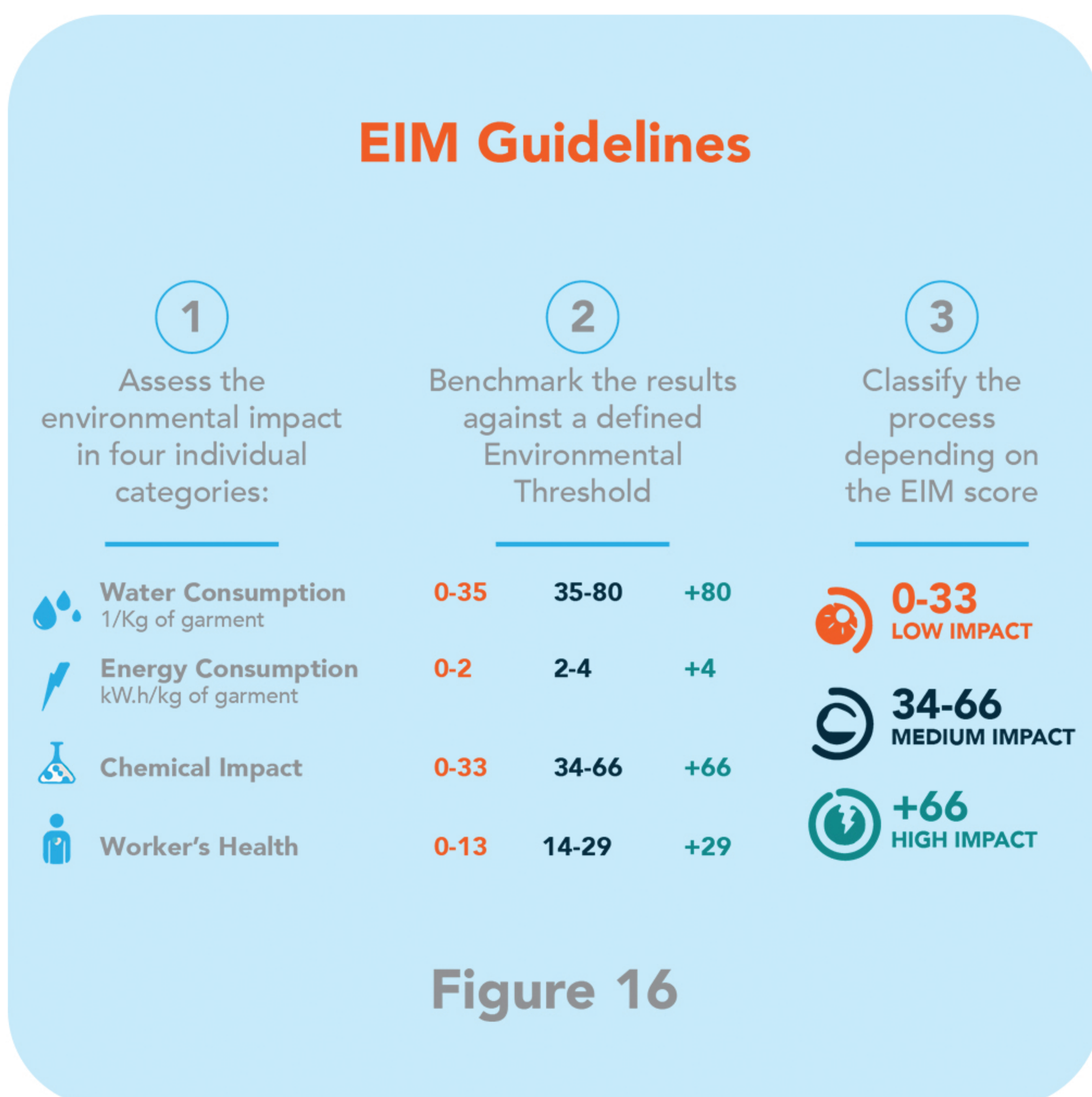
Ambition Apparel has been cognizant of the business impact of incorporating sustainable environmental practices since 2018. It even developed a multi-year sustainable growth strategy. A result of this strategy has been the incorporation of Environmental Impact Measuring (EIM) software. EIM typically offers the following advantages to manufacturing concerns:

- Identify and organise compliance obligations
- Standardise and centralise activities
- Delegate responsibility and drive accountability
- Measure, monitor, and analyse programme performance
- Improve documentation and recordkeeping
- Ensure programme continuity
- Save time and money
- Reduce compliance risk⁹

sumption from 120 l/kg of garment in January 2020 to around 42 l/kg of garment in December 2022, well below Inditex standards of around 93 l/kg of garment produced. The company has also undertaken the following investments:

- Installation of 0.28 MW of solar panels (operational now for three months as of December 2022)
- Installation of chemical, water and energy efficient Jeanologia, YILMAK and Brongo washing machines all of whom offer significant advantages across the three categories
- Installation of Jeanologia Compact finishing machine which utilises laser technology for rendering styles on ripped jeans and minimises environmental and health impact on workers, at the same time offering 67% reduction in energy consumption.

To sum up, DfS has empowered Ambition Apparel further to think beyond the box and become more receptive to change and better manage and execute the change.



Source: Jeanologia

EIM helps monitor water consumption (litres per kg of garment produced), energy consumption (kWh per kg of garment produced), chemical impact as well as worker's health. The EIM has been an important tool which has helped reduce water con

[9] Source: 8 benefits of Environmental Management Software, Solutions TRAK (Accessible at: <https://www.solutionstrak.com/blog/8-benefits-of-environmental-management-software/>)