SOPs for Apparel Production (Construction) in KIs (Khadi Institutions)

Purpose of SOPs :

To provide guidance & standardize procedures in Apparel Production Processes. (Spreading - Finishing - Quality Inspection)

Fabric Layering & Cutting

Activity	Meaning & Details	Procedure	Suggestions for Improvement
Spreading & Layering	Fabric Spreading and Layering is the process of laying out fabric rolls on a table or other flat surface in preparation for cutting or other processing in the textile manufacturing industry. The fabric is laid out flat and even in a single layer, with any wrinkles or folds smoothed out. Multiple layers of fabric are laid out one on top of the other in the case of layering, often with a layer of interfacing or other material in between. This method is used in the production of padded or quilted fabrics, as well as clothing and accessories that require multiple layers of fabric for warmth or added strength.	**Fabric Preparation** - It begins with unrolling the fabric roll or bolt and placing it on a spreading table or other flat surface. Any wrinkles or creases in the fabric are smoothed out, and any slack is removed. **Marking the Fabric** - Using a pen or chalk, the fabric is then marked with the pattern or cutting lines. A cutting marker, a special machine that guides the movement of the marker to follow the pattern and ensure the markings are accurate and consistent, is frequently used for this process. **Spreading the Fabric** - The fabric is then spread out across the table, marked side up. Depending on the fabric type and thickness, this may be accomplished with a fabric spreading machine, which unrolls the fabric and applies tension to keep it flat and smooth. **Layering the Fabric** - When additional layers of fabric or other materials such as interlining, interfacing, or padding are required, they are placed on top	**Implement a Quality Control System** - Create a system for inspecting the fabric's quality before and after it is spread, as well as throughout the cutting process. This allows for the early detection of problems and the implementation of necessary changes to ensure that the final product meets the desired quality standards. **Train Operators on Proper Technique** - The final product's quality is heavily dependent on the operators' skills and knowledge. Provide operators with training so that they have the knowledge and skills needed to spread and cut the fabric correctly. **Use the Right Fabric** - Choosing the right fabric will make the process easier and more efficient. Furthermore, it is always preferable to use fabric that is appropriate for the end product. **Use the Proper Cutting Method** - There are numerous cutting methods available, including die cutting, laser cutting, and water jet cutting. Each of these

		of the bottom layer. The layers are then aligned and smoothed to be flat and even.	methods has advantages and disadvantages, so it is critical to select the one that is best suited for your specific product and fabric.
Cutting	The process of cutting textiles into specific shapes or sizes for the purpose of making clothing, accessories, or other items is referred to as fabric cutting. After the fabric has been spread out and marked with the desired pattern or cutting lines, the cutting process begins. The fabric is then cut with specialized cutting machines that can be either manual or computer-controlled. There are various cutting methods, each with its own set of benefits and drawbacks. Among the most common cutting methods are: **Cutting with Scissors** - This is the most basic and traditional method of cutting, in which a pair of scissors is used to cut the fabric along the marked lines. This technique is most commonly used for small-scale or sample cutting. **Knife Cutting** - Using a long, sharp blade, cut through multiple layers of fabric at once. This technique is frequently used to cut thicker or heavier fabrics.	**Cutting the Fabric** - The cutting process begins once the fabric is properly positioned after layering. Depending on the method, this may entail cutting through the fabric with scissors, knives, dies, lasers, or water jets along the marked lines. **Removing Scraps and Inspecting the Cuts** - After the cutting process, the scraps and remaining fabric are removed from the table, and the cut pieces are inspected to ensure that they are accurate and have clean edges. At this point, any necessary changes can be made. **Sorting the Cuts** - The cut pieces are then sorted according to the pattern or design and are ready to be sewn or processed in another way.	**Use the Proper Blade** - The quality and sharpness of the blade can have a significant impact on the cutting quality. As a result, it is critical to use the proper blade and keep it sharp and well-maintained. **Use the Appropriate Cutting Method** - Choose the best cutting method for the product and fabric. Each cutting method has advantages and disadvantages, so it is critical to select the one that will produce the best results. **Experiment with Different Cutting Parameters** - Experiment with various cutting parameters such as cutting speed, pressure, and blade depth to determine the best settings for each fabric and cutting method. When cutting fabric, it's also important to keep safety in mind because the process can involve sharp blades and heavy machinery. Ensure that operators are properly trained on how to use cutting equipment and that appropriate safety precautions are in place to prevent injuries.

Sewing

Activity	Meaning & Details	Procedure	Suggestions & QC
Line Balancing	Line balancing in apparel production refers to the process of ensuring that a production line's workload and resources are evenly distributed among workers and machines in order to maximize efficiency and productivity. This entails analyzing the tasks and operations involved in the manufacturing process, determining the time required for each task, and then assigning the tasks to the workers and machines in the most efficient way possible. Line balancing can also include changing the layout of the production line and the way tasks are performed to improve workflow and reduce bottlenecks.	**Determine the tasks and operations involved in the manufacturing process** - Analyzing the process flow, identifying the various stages of production, and determining the tasks that must be performed at each stage are all part of this. **Determine how much time each task will take** - This entails timing how long each task takes to complete while accounting for variables such as machine setup time, changeover time, and worker skill level. **Assign tasks to workers and machines** - Tasks are assigned in a way that best utilizes resources and achieves maximum efficiency, based on the time required for each task and the skills and capabilities of the workers and machines. **Adjust the production line layout** - The physical layout of the production line is analyzed and, if necessary, modified to improve workflow and	**Regularly review and analyze production data** - By reviewing and analyzing production data on a regular basis, it is possible to identify bottlenecks and other issues that affect line balancing. **Use visual management techniques** - Visual management tools such as Andon systems and process flow diagrams can help to make the manufacturing process more transparent and understandable, making it easier to identify and resolve issues. **Implement lean manufacturing techniques** - Lean manufacturing techniques such as Kanban, 5S, and Total Productive Maintenance (TPM) can help to improve the efficiency and flow of the manufacturing process. **Train and empower Workers** - Workers can help to identify and resolve issues that affect line balancing if they are given the necessary training and given the autonomy to make decisions and suggest

		reduce bottlenecks. **Change the way tasks are completed** - Based on the analysis of the production process, changes to the way tasks are completed may be made in order to improve efficiency and productivity. **Monitor and adjust** - The production line is monitored on a regular basis to ensure that it is operating at peak efficiency, and adjustments are made as needed to keep the line balanced.	improvements. **Implement cross-training** - Cross-training workers in different tasks and operations can help to ensure that the production line can continue to run even if one worker is absent, which improves line balancing and reduces the risk of bottlenecks.
Target Allocation	In the sewing department, target allocation refers to the process of determining the number of garments that a sewing team should produce in a given period of time, such as a day or week. This entails analyzing the available resources, such as the number of workers, machines, and operating hours, and then determining how much work can be completed within that time frame.	**Determine the Production Capacity** - Determine the department's production capacity by analyzing the number of machines, workers, and hours of operation and determining the maximum amount of work that can be completed in a given period of time. **Set Production Targets** - Production targets for the sewing department are set based on production capacity, such as the number of garments that should be produced per day or week. **Allocate Goals** - Goals are then assigned to each individual worker, taking into account factors such as skill level, experience, and availability.	**Analyze historical data** - Analyzing historical data can aid in the identification of patterns and trends that can be used to improve target allocation. **Involve workers in goal setting** - By involving workers in goal setting, they can provide valuable input on what is achievable and assist in identifying any potential issues. **Regularly review and adjust targets** - Review and adjust targets on a regular basis to ensure that they remain realistic and achievable, taking into account any changes in resources or external factors. **Communicate clearly** - Communicate clearly to all employees and ensure that everyone understands what is

		Monitor and Adjust - Production targets are monitored on a regular basis, and adjustments are made as needed to ensure that the department meets or exceeds the targets. **Encourage teamwork and incentives** - In order to boost morale and productivity, encourage teamwork and offer incentives for meeting or exceeding production targets.	expected of them. **Implement incentives** - Implement incentives for meeting or exceeding targets to boost morale.
Fulfilling Checkpoints	The process of ensuring that certain quality and performance standards are met at various stages of the production process is referred to as fulfilling checkpoints in a sewing line. Inspections of raw materials, work-in-progress garments, and finished garments, as well as machine performance tests and other measurements, are examples of checkpoints.	**Identify the checkpoints** - Identify key quality and performance standards that must be met at various stages of the manufacturing process, such as material quality, seam strength, and machine performance. **Establish inspection and testing procedures** - Establish procedures for inspecting and testing materials, work-in-progress garments, and finished garments, as well as procedures for testing machine performance. **Train workers** - Workers should be trained on how to perform inspections and tests, as well as how to identify and address any issues that may arise. **Implement the checkpoints** - Put the checkpoints in place at	**Establish standards** - Establish clear and measurable standards for the quality and performance of materials, work-in-progress garments, finished garments, and machine performance. **Train workers on quality control** - Workers should be trained in quality control and inspection techniques, and they should be given the tools and resources they need to do their jobs effectively. **Implement quality control at all stages of the production process** - By implementing quality control at all stages of the production process, rather than just at the end, issues can be identified earlier. **Implement an action system** - Implement an effective corrective action system to address any

		the appropriate stages of the manufacturing process, and make sure that the inspections and tests are done correctly and consistently. **Monitor and Adjust -** Monitor the production process and the results of inspections and tests on a regular basis, and make adjustments as needed to ensure that quality and performance standards are met.	quality control issues that arise, as well as to ensure that the root cause of the problem is identified and resolved.

Quality Inspection

Activity	Meaning & Details	Procedure	Suggestions & QC
Quality Control	In the apparel manufacturing industry, quality control (QC) refers to the process of ensuring that the clothing produced meets certain quality standards and conforms to the specifications outlined in the design. Quality control's goal is to identify and correct any problems or defects in clothing before it is shipped to customers.	**Inspection** - It involves inspecting the clothing for any flaws or problems, such as holes, loose threads, misaligned seams, or incorrect sizing. Inspections can be performed at any stage of the manufacturing process, from raw materials to finished garments. **Measurements** - This involves measuring the garments to ensure that they fit the specified sizes and dimensions. **Auditing** - It entails evaluating the entire production process to ensure that it is efficient, cost-effective, and in accordance with industry standards and regulations. **Documentation** - It entails maintaining records of the quality control process, such as inspection reports, test results, and measurements.	**Employee Quality Control Training** - Training all employees, including those who are not directly involved in the inspection process, on quality control can help to ensure that everyone understands the importance of quality control and knows how to identify and address issues. **Conducting Regular Audits** - Auditing the production process on a regular basis can help to identify areas for improvement and ensure that all procedures are followed correctly. **Encouraging Employee Participation** - Providing employees with the necessary tools, such as checklists and training, can help to improve the overall quality of the clothing produced. **Continuous Data Monitoring and Analysis** - Collecting, analyzing, and monitoring data on the manufacturing process and quality control can assist in identifying patterns, trends, and areas for improvement. **Building Partnerships and Collaborations** - By

			sharing best practices and obtaining feedback on products and processes, partnerships with suppliers, customers, and industry organizations can help to improve quality control.
Trims Inspection	Trim Inspection is the process of inspecting the quality of the various small components, or "trims," used in clothing construction, such as buttons, zippers, snaps, and other fasteners. Trim inspection is a critical step in the quality control process because these small components can have a significant impact on the overall quality and functionality of the clothing.	**Correct Size and Style** - The trims are checked to ensure that they are the correct size and style, as well as that they meet the design specifications. **Functionality** - Trims are checked for functionality, such as zippers that zip and unzip smoothly, buttons that button and unbutton easily, and snaps that snap and unsnap securely. **Appearance** - The trims are checked for visual appeal and defects such as scratches, dents, or discoloration. **Compliance** - The trims are examined to ensure that they comply with any applicable industry standards or regulations.	**Conducting Regular Audits** - Auditing the production process on a regular basis can help to identify areas for improvement and ensure that all procedures are followed correctly. **Encouraging Employee Participation** - Providing employees with the necessary tools, such as checklists and training, can help to improve the overall quality of the clothing produced. **Continuous Data Monitoring and Analysis** - Collecting, analyzing, and monitoring data on the manufacturing process and quality control can assist in identifying patterns, trends, and areas for improvement. **Establish Clear Standards and Specifications for trims used in clothing production** - Having clear standards and specifications for trims used in clothing production can help to ensure that all trims are consistent and meet the required quality level. **Use Checklists and Inspection forms** -

			Having a checklist or inspection form that lists the key points to be checked during trim inspection can assist in ensuring that all aspects of the trims are thoroughly checked and nothing is overlooked. **Provide Trim Inspection training to all employees** - Providing trim inspection training to all employees can help to ensure that everyone understands the importance of quality control and knows how to identify and address issues.
Fabric Shade Inspection	The process of checking textile textiles for compliance with the necessary colour and shade requirements is known as fabric shade inspection. In order to ensure that materials are uniform in appearance and match consumer expectations, it is a crucial quality control measure employed in the textile production industry. Samples of the fabric are examined using a variety of techniques during the fabric shade inspection, including visual inspection, spectrophotometry, and colour matching. To make sure that the shade and colour are within allowable tolerances, the samples are compared to a standard or reference fabric or colour swatch.	Depending on the particular needs of the textile manufacturer or customer, the process for cloth shade inspection may change. Nonetheless, the following are the general steps in the process: **Sample Selection** - A representative piece of the fabric under inspection is chosen for analysis. The sample needs to be substantial enough to accurately represent the complete batch of fabrics. **Sample Preparation** - Samples are prepared by cutting them into tiny swatches, which are typically 4-6 inches long and 2-3 inches wide. The batch or lot number is then written on the labels and used to identify the swatches.	**Employ a Systematic Technique** - To ensure consistency and accuracy in the evaluation process, it is crucial to use a consistent procedure for fabric shade inspection. **Establish Acceptable Tolerances** - Take into account the needs of the customer as well as industry norms to establish acceptable tolerances for colour and shade variations. This will make it easier to guarantee that fabrics meet the appropriate requirements. **Proper Lighting** - Make sure the inspection area has the right lighting by checking it out. Using uniform and regular lighting conditions is crucial since it can influence how colour and shade are perceived.

	Cloth shade assessment is crucial since even minute differences in colour and shade can have an impact on the final product's look and quality. Also, it is crucial in fields like fashion, where maintaining colour and tone consistency is crucial for developing collections that flow together and satisfying consumer desires.	**Spectrophotometry** - The reflectance or transmittance of the cloth at various wavelengths is measured using a spectrophotometer. To ascertain the accuracy of the fabric's colour and shade, the data collected is contrasted with the reference values. **Color Matching** - To make sure the colour and shade are within acceptable tolerances, the samples are compared to a standard or reference cloth or colour swatch. Visual colour matching and software assistance are also options for colour matching. **Assessment and Acceptance** - The fabric is assessed and either accepted or rejected based on the findings of the visual examination, spectrophotometry, and colour matching. The cloth may be returned for further processing or thrown away if it does not adhere to the necessary colour and hue standards.	**Equipment Calibration** - To achieve precise measurements, calibrate spectrophotometers and other machinery used for fabric shade examination on a regular basis. **Record Keeping** - Maintain accurate and thorough records of all fabric shade inspection findings, including the batch or lot number, the date, and any variations from the reference or standard hue. **QC Checks** - Conduct quality control (QC) inspections at several phases of the production process, such as dyeing and finishing, to identify any concerns early and avert more serious ones in the future. **Involving Inspectors** - To maintain uniformity in the evaluation process and to identify any anomalies or errors, involve numerous inspectors in the fabric shade inspection procedure.
Cutting Quality Check	To make sure that the fabric is precisely cut and the cut pieces comply with the necessary standards, cutting quality checks are a type of quality control procedure used in the clothing manufacturing business. This step is completed	The following steps are part of the cutting quality check procedure - **Preparation** - The cut fabric pieces are gathered and arranged according to size, shape, and pattern during preparation.	**Implement a Standardised Process** - To ensure accuracy and consistency in the evaluation process, create a standard operating procedure for the cutting quality check. **Regularly inspect the cutting apparatus** - To

	before the fabric is sewed to create an article of clothing. The cut cloth pieces are examined for their size, shape, and consistency during the cutting quality check. By doing this, you can make sure that the fabric pieces will fit together precisely during sewing and that the finished item will be the right size and form. Each cut piece of cloth is measured and examined in comparison to a pattern or template as part of the cutting quality check. The following criteria are examined by the inspector - **Dimensions** - The cut pieces should match the pattern or template's specifications for size and shape. **Shape** - The sliced pieces ought to have sharp, clean edges. The cut components' shapes should precisely correspond to the pattern or template. **Consistency** - The chopped pieces should be uniform in size and shape across the whole batch. Any differences should be identified and fixed.	**Checking Dimensions** - Using a measuring tape or a ruler, the inspector measures the length, width, and other parameters of each piece of fabric. To make sure that the fabric pieces are the right size, the dimensions are checked to the pattern or template. **Examining the Shape** - The inspector looks over each piece of fabric to check for straight cuts and smooth edges. To make sure the pattern or template is exact, the cut pieces' shapes are compared. **Examining Consistency** - The inspector examines the batch's overall consistency of the cut cloth pieces. Any deviations in the measurements, form, or size are noted and rectified. **Recording** - Any variations from the norm or reference pattern are noted in the cutting quality check findings. The documents are kept on file for upcoming examination and reference. **Corrective Action** - It is conducted to address any discrepancies that are discovered during the cutting quality check. This can entail re-cutting the cloth pieces, correcting the cutting device, or taking	guarantee that the cutting machine is precisely cutting the cloth pieces, regularly check its accuracy and maintenance. **Check the pattern or template** - Ensure that the cutting pattern or template is precise and current. Any modifications to the template or pattern should be conveyed right away to the cutting department. **Use calibrated measuring equipment** - To ensure precise measurements during the cutting quality check, utilise calibrated measuring equipment, such as a measuring tape or ruler. **Inspectors** - To maintain uniformity in the evaluation process and to identify any anomalies or errors, involve numerous inspectors in the cutting quality control process. **QC Control** - Conduct quality control (QC) inspections at several phases of the production process, such as cutting, sewing, and finishing, to identify any faults early and avert more serious ones later on. **Training and Education** - To ensure reliable and consistent results, train and educate staff on the significance of the cutting quality check and the procedures involved.

		care of any other problems that might have contributed to the errors.	
Assembly Line Quality Check	A quality control measure known as an assembly line quality check is used in manufacturing operations to guarantee that each stage of the assembly process is carried out correctly and that the finished product fulfils the necessary quality requirements. At several points throughout the assembly process, such as before, during, and after assembly, it entails inspecting the product's quality. Inspectors inspect the product on the assembly line to look for flaws, inconsistencies, or departures from the standards. This makes it easy to spot any problems early in the assembling process and fix them before the final product is finished. A quality check on the assembly line assists producers in ensuring that their goods satisfy the necessary requirements for quality while also assisting in the reduction of waste and rework.	**Preparation** - The assembly line is prepared with the necessary hardware, materials, and tools. The assembly line workers are informed of the product specifications and quality standards. **Pre-assembly Inspection** - The inspector examines the components, tools, and raw materials to make sure they adhere to the necessary quality standards and are in good operating order. **In-process Inspection** - Inspection carried out while a product is being assembled to make sure that each step has been correctly carried out on the assembly line is known as in-process inspection. This may involve examining the components' alignment, fit, and finish as well as any electrical or mechanical operations. **Final Inspection** - The finished product is examined to make sure it satisfies the necessary quality requirements. This may involve looking for any flaws, visual flaws, or functional problems. **Record Keeping** - Any deviations from the norm or reference	**Standardized Procedures** - To guarantee consistency and accuracy in the evaluation process, develop a standard approach for the assembly line quality check. **Inspectors with Training** - Ensure that the inspectors in charge of the assembly line quality check are knowledgeable about the product and the required standards. **Testing Tools** - Provide the inspectors the right testing tools and equipment so they can conduct quality checks as the parts are being put together. **Periodically inspect the Assembly Line** - Verify the assembly line's accuracy and maintenance on a regular basis to make sure the assembly procedure is being followed appropriately. **Record Keeping** - Maintain accurate and thorough records of the outcomes of the assembly line quality checks, including the batch or lot numbers, dates, and any deviations from the reference or standard specifications. **Involve Inspectors** - To

		standards are noted in the results of the assembly line quality check. The documents are kept on file for upcoming examination and reference. **Corrective Action** - It is conducted to address any deviations that are discovered during the quality check on the assembly line. Reworking the product or dealing with any other problems that might have contributed to the deviations may be necessary.	maintain uniformity in the evaluation process and to identify any anomalies or errors, involve numerous inspectors in the assembly line quality check process. **QC Checks** - Conduct quality control checks (QC) throughout the production process, including at various assembly stages, to identify any faults early and stop bigger difficulties from developing. **Corrective Action** - If any deviations are discovered during the quality inspection on the assembly line, action should be done right away to fix the problem. Reworking the product or dealing with any other problems that might have contributed to the deviations may be necessary. **Continuous Improvement** - To find areas for improvement and make sure the product is fulfilling the necessary quality standards, it is important to examine and improve the assembly line quality check procedure on a regular basis.