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INNOVATIVE DESIGNING OF UNISEX DOUBLE-SIDED JACKET

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ABSTRACT:

Textile industry is one of the main parameter for the economic growth of nation and modernization of life. Thus, different large and medium scale industries play a key role in nations economic development both in developed and developing countries. The textile industry take the biggest share due to its ability to create a variety of job opportunities and its integration with different economic sectors both globally and locally. It is the most expanding and emerging sector.Cotton, woolen, synthetic fibers, synthetic dyes, chemical, and process water are among the major impute raw materials in this industry and all these inputs diversified the economic importance of the textile industry. Based on fibers production, the textile industries can be categorized into two major processes such as dry and wet fabric processes. In dry processing, solid wastes are mainly generated, while liquid wastes are mainly generated in wet processing steps.Wet fabric processing is including sizing, scouring, bleaching, mercerizing, dying, finishing, and printing. During fiber formation, potable water, different chemicals and dyes consumed and waste water discharge from wet processing steps depend on the operations. This process is the main source of contaminated water, which is containing of clean water, dyes, and chemicals in various wet utilization of clean water, dyes and chemicals in various wet processing unit operations. Discharge of waste water from the textile industry contains toxic pollutants such as dyes, chrome, Na0H, starch, acid, etc. therefore, the textile factories are estimating to consume much potable water and chemicals when compared to other industries and almost all effluents are mostly contaminated. An average textile industry consumes process potable water about two hundred litter per kilogram of product. Kant reported that estimation of the world bank dyeing and finishing section is near to 17-20% of industrial waste water generate.

KEYWORDS:

Designing, double sided hoodie, fleece (cotton) fabric, slected design, end product

1 INTRODUCTION:

As one type of the 3D textile structures, the 3D spacer knitted fabric has been widely used in engineering field owning to its smooth and efficient processing in warp and weft knitting. Knitted spacer fabrics can be produced using a flat knitting machine, two needle bar raschel knitting machine(warp-knitted spacer fabric), and also a circular double jersey machine (weftknitted spacer fabrics). Three layer weft-knitted spacer fabrics have a structures that consists of two separate knitted layers joined together by a connective yarn. Such materials may have the same or completely different in the face and back layers and different types of yarn in the connecting layer. Thanks to their characteristics, spacer fabrics show different properties which cannot be met by the conventional textiles and have not been possible to achieve by using them in various fields, such

as protective clothing, transportation, geo-textiles, buildings, packing materials, military equipment, medicine and sports and so on.

A systematic study of mechanical behavior and the influence of the structure factors is necessary, which would allow proper choice of the fabric structure to obtain high-performance 3D knitted fabrics. Meanwhile, little research has been done to study the effect of yarn content and knitted structure type upon three-layer weft-knitted spacer fabric mechanical behavior. Based on the existing literature, it has been found that the relationships between the knitted structures and the properties of the weft-knitted spacer fabrics are still not established.

The cutting mechanism of the knitted structure is much more complicated due to fiber and yarn intrinsic properties, and also specific geometry and mechanical performance of the knitted fabric. Therefore, there is still much work to continue to get a through-understanding of the mechanism of fabrics cut resistance performance.

So, 3D knitted materials of the complex structures have been developed to extend their applicability in the areas of functional and technical clothing by providing multifunctional properties. The lack of comprehensive studies on the functional characteristics, especially on mechanical and comfort properties of three-layer weft-knitted fabrics, is a sound basis for the research. This paper profoundly discusses the advance characteristics and also air permeability behavior concerning the composition and structural parameters.

.Traditionally the automation and integration of processes in the textile industry is dictated by the increasing need to offer specialized products at optimum quality and low cost, satisfying at the same time the fast cycles of fashion trends or in the case of technical applications the delivery of products of high quality and exact properties. Under these premises, computer engineering tools, such as computer aided engineering (CAE) and computer aided design(CAD), have recently gained attention.

Textile are flexible, anisotropic, inhomogeneous, porous materials with distinct viscose elastic properties. These unique characteristics make textile structures to behave essentially different compared with other engineering materials. Makeover, textiles are characterized by an increased structural complexity. Their properties mainly depend on a complicated nature of the textiles mechanics makes them ideal candidates for a mechanical analysis using computerbased methods.

A type of outer wear used for layering or for keeping woven in cold weather. Jackets can be made many different materials, such as cotton or wool, which affect their insulation or change their styling.

Sweatshirt used for their original purpose or comfortable and athletic wear. They are also worn for staying worn in cooker temps, rapping a collegiate team or layering to form a fashionable outfit.

Semi formal wear or half dress is a grouping of dress codes indicating the sort of cloths worn to events with a level of formality between informal wear and formal wear. In terms of breathability and comfort, cotton shirts are definitely the way to go. Cotton is a natural fiber that allows air to circulate, which can help keep you cool and dry throughout the day.

Based on the ideas in this research the side has been generated to create a double sided unisex garment is designed and the wear study is carried out.

2 MATERIALS AND METHODOLOGY:

2.1 FLOW CHART

DESIGNING OF DOUBLE SIDED UNISEX GARMENT

FABRIC SELECTION

⬇

PATTERN MAKING

⬇

SEWING

⬇

WEAR STUDY

⬇

FEEDBACK

⬇

RESULT&DISCUSSION

2.2 DESIGNING OF DOUBLE SIDED UNISEX GARMENT

Double sided jacket was designed garment platforms were composed of a silhouette to maintain the proximity between the bodices. first, the garment platform design must reflect the (fallwinter)outdoor fashion wear and trends. The garment platforms design and development focused on the aesthetic and functional standards of outdoor fashion. Of the currently popular styles, oversized silhouette are particularly well suited. Based on these fashion and technical considerations, several criteria for designing this unisex garment platform were selected. The final design was and color combination was choosed. Design was selected, collar polo sweatshirt with long sleeve and another one is jacket, with two pockets the chest.

DESIGN 1

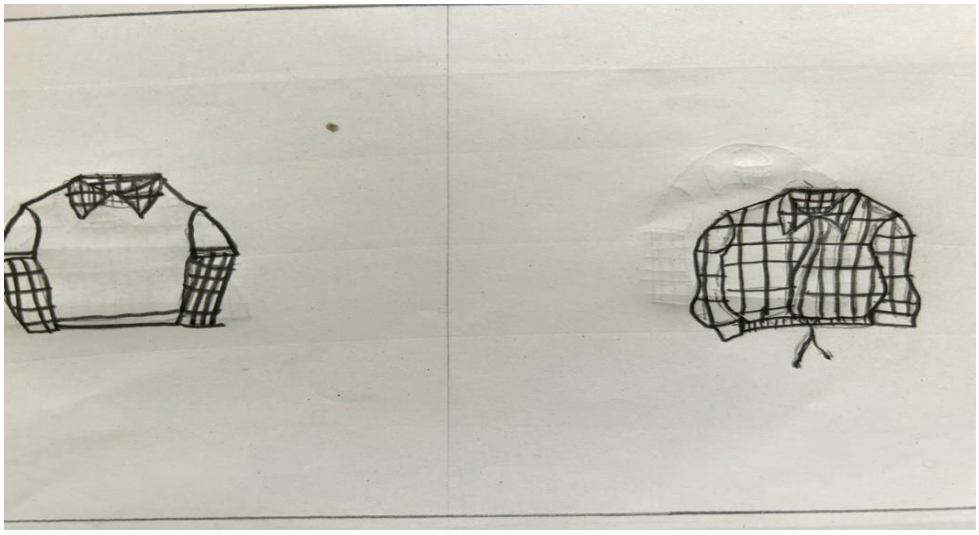

FIGURE 1 DESIGN 1

DESCRIPTION:

This is a basic t-shirt with jerkin style. Its also formal and casual wear. Especially this is unisex garment. Its looks soft and aesthetic. But the user can wear daily purpose.

DESIGN 2

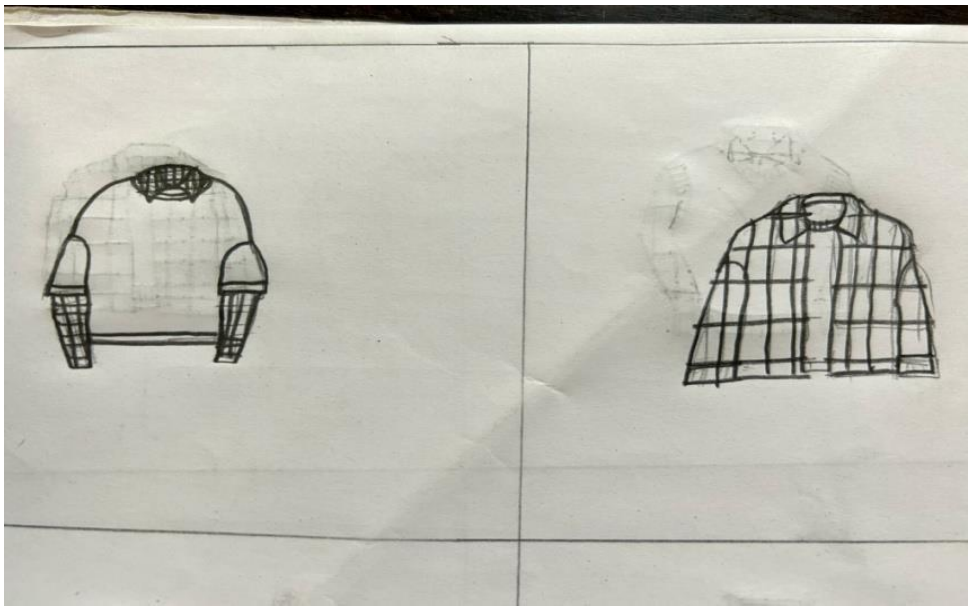

FIGURE 2 DESIGN 2

DESCRIPTION:

This oversized T-shirt has cool for everyone. And classic look has given jacket. But oversized was looks loosen. So this not appropriate for all.

DESIGN 3

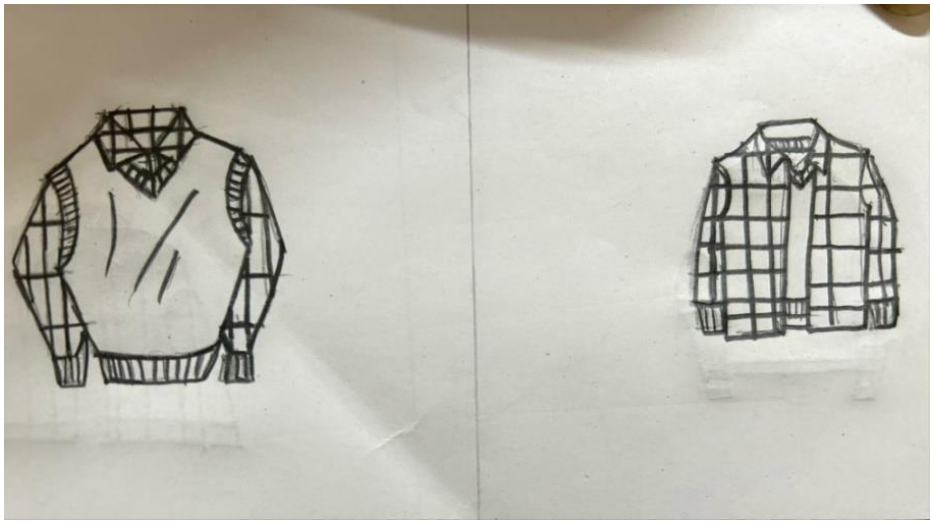

FIGURE 3 DESIGN 3

DESCRIPTION:

This is vest sweater style for formals. And classy jacket for casuals. Its looks like a Korean fashion. But sweater vest is not looks good.

DESIGN 4

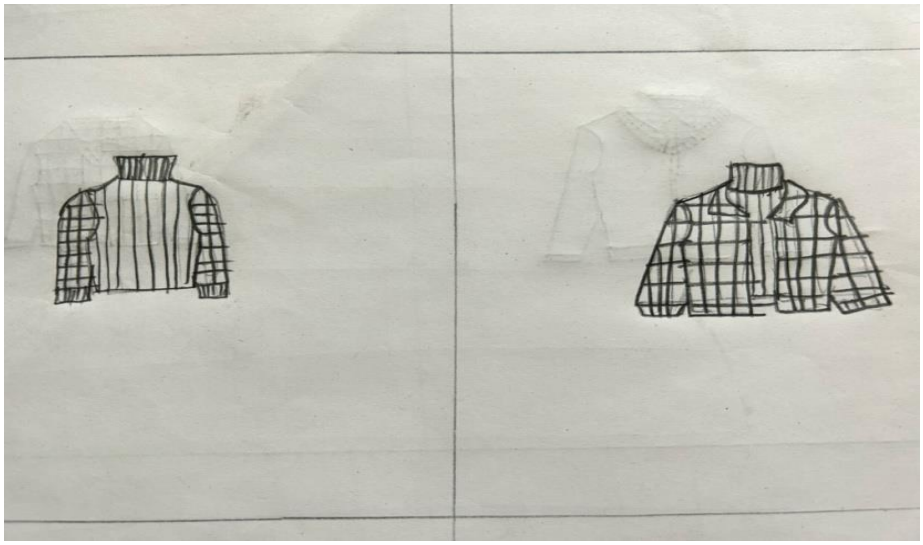

FIGURE 4 DESIGN 4

DESCRIPTION:

This is a high neck vest with shirt and simple jacket. This is k-fashion style. But uncomfortable is high neck for people.

DESIGN 5

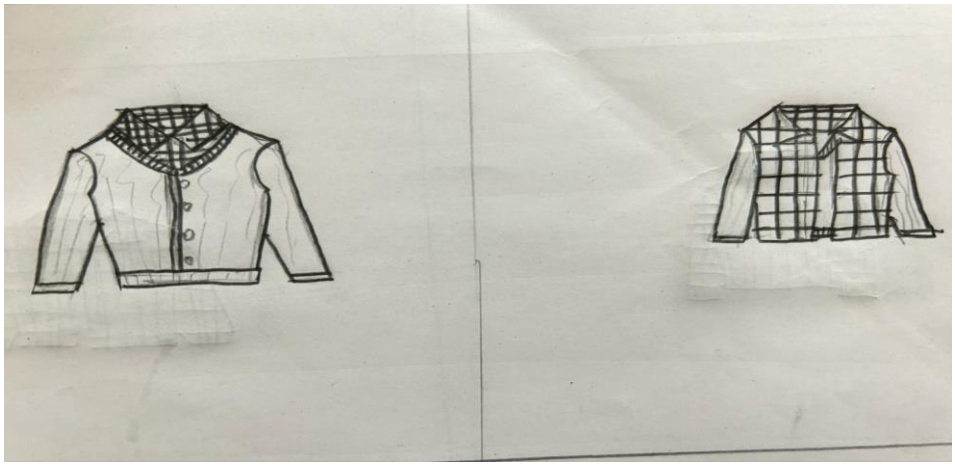

FIGURE 5 DESIGN 5

DESCRIPTION:

This is full sleeve sweater with sleeveless jacket. This look street style wear for casuals. But not accepted some peoples.

DESIGN 6

FIGURE 6 DESIGN 6

DESCRIPTION:

This is a classic style of sweatshirt and flannel jacket. This garment gives formal and casual looks. Aesthetic and soft look. This is a kind of Korean fashion. Especially this garment is unisex wear

2.3 AIR PERMEABILITY TEST:

The air permeability test of fabric is a method used to measure the ability of a fabric to allow air to pass through it. This property is important in various applications such as clothing, upholstery, and technical textiles. The test helps in evaluating the breathability, comfort, and performance of the fabric. Air permeability of fabric plays a crucial role in ensuring comfort by facilitating airflow and moisture vapor transmission, which are essential factors for maintaining thermal regulation, moisture management, and overall wear ability. Here's how air permeability contributes to comfort. **Breathability, moisture management, thermal regulation, comfort fit, reduced stickiness, odor control, environmental adaptability**

8.The number of tests may go up to 4 but the minimum required number.

2.4 FABRIC THICKNESS

The thickness can very depending on factors such as type of yarn used, the weaving technique, and the desired characteristics of the final product. Generally, fabric tends to have slightly coarser texture compared to industrially produced. As it is woven and knitted. However, the thickness can be customized based on specific requirements. Typically, fabric thickness can be measured is terms of ounces per square yard(oz/yd^2) or grams per square meter(g/m^2). The weight of fabric can range from lightweight to heavyweight, with variations in thickness affecting the feel, drape, and durability of the fabrics. Its important to note the thickness of the fabric can be also affect the

2.5 TENSILE STRENGTH

Tensile strength is a measure of the maximum amount of tensile(pulling) stress that a material can with stand before breaking or fracturing. In the context of fabrics, tensile strength refers to the maximum force that the fabric can endure when pulled before it tears apart. Its usually indicates stronger and more durable fabric, which can withstand daily wear and tear better. Tensile strength is typically measured in units such as pounds-force per square inch(psi) or new ton per square meter(N/m^2).

2.6 ABRASION RESISTANCE

International organization for standardization. Textiles – determination of abrasion resistance of fabrics by the mart din dale method –determination of specimen breakdown (ISO129471998). Abrasion resistance refers to the ability of material to withstand wear and damage caused by the friction or rubbing against another surface. In the context of fabrics abrasion resistance is crucial because it determines how well the fabric can withstand repeated rubbing against various surfaces during everyday wear. A higher abrasion resistance indicates that the fabrics is more durable and less likely to develop signs of wear, such as fading or thinning, overtime. Testing for abrasion resistance involves subjecting the fabric to rubbing against an abrasive surface under controlled conditions to assess its resistance to wear. The property is essential for ensuring the longevity and quality of fabrics especially in areas prone to high friction, such as the knees and seat.

2.7 DESIGNING

FIGURE 7 DESIGN(AI)

FIGURE 8 DESIGN(AI)

Double sided jacket,offering a versatile canvas for creative expression in fashion design. Designers experiment with emblishments, washes, and treatments to reinvent classic jacket silhouettes with honoring heritage. This article delves into the innovative double sided jacket. Designing a double sided jacket offers a unique opportunity to merge traditional craftmanship with contemporary style.

2.8 PATTERN DRAFTING

Drafting a pattern for double sided jacket involves adapting patterns to accommodate the unique characteristics of cottonnand brushed cotton fabric. Here is a step-by-step guide.

First, preciesly measured the individual who will be wearing the jacket. Important measures include the circumfrence of the shoulder, sleeve, collar, chest, armhole, cuff and neck. Drafted a double sided jacket for the front and back and any design details necessary for the jacket

incorporated.

Drafted a front and back complted. This is typically involves a buttons on jacket. Once the pattern is drafted place the pattern on the double sided jacket on the cut along the seam allowance.

2.9 CONSTRUCTION PROCEDURE

- Lay out the double sided jacket patterns according to the pattern. Pin or the pieces together along the seam lines to keep the aligned during stitching.
- Topstitching is a signature feature of double sided jacket and is often done using a slightly thicker thread in a light colour. Common areas for top stitching include inseams, outsseams, waist and cuff and collar.
- Longer stitch length(around 3.5 to 4mm) is used for top stitching to create durable finish.
- The main seam of the double sided jacket is stiched, such as the inseam and outseam, using a straight stitch. Backstitch at the beginning and end of each seam to secure the stitches.
- Depending on the design, seams may be used for added durability and a clean finish, especially on the inseam and side seams.
- The waist band is attached to the edge of sweatshirt, aligning the raw edges and stitching in place. Top stitch along the edge the waist for reinforcement.
- The front closer is constructed, typically using a combination of to stitching and button stitch. Carefully follow the pattern instructions to ensure proper alignment and functionally.
- The raw edges of the fabric are finished using overlock stitch to prevent fraying.
- The completed seams and garment components are pressured with a steam iron to set the stitches and create the crisp, professional finish.

4 RESULT AND DISCUSSION:

4.1FABRIC WEIGHT IN GSM

In textiles, GSM stands for "grams per square meter." It is a measurement used in the textile industry to determine the weight or density of cloth. GSM measures how much a square meter of cloth weighs, indicating its thickness and quality. Fabrics with greater GSM values are often denser, thicker, and more durable, whereas fabrics with lower GSM values are lighter and thinner.

S NO	GSM
COTTON	1.11
BRUSHED COTTON	1.87

TABLE 1 GSM

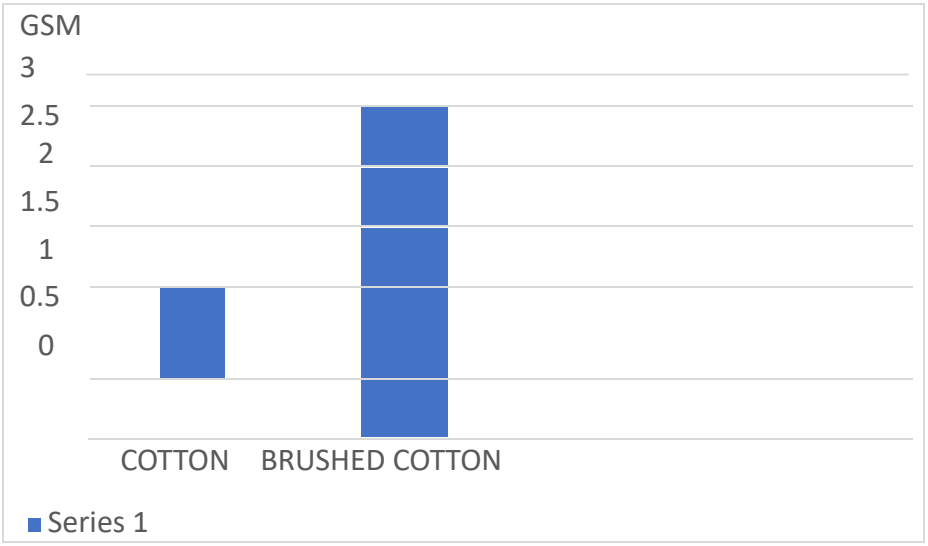

FIGURE 9 GSM GRAPH

4.2 FABRIC THICKNESS:

In textiles, fabric thickness is defined as the distance between a piece of fabric's two opposed surfaces. It is a significant feature that impacts the fabric's look, feel, performance, and applicability for different applications.

S NO	FABRIC THICKNESS
COTTON	0.70
BRUSHED COTTON	1.95

TABLE 2 FABRIC THICKNESS

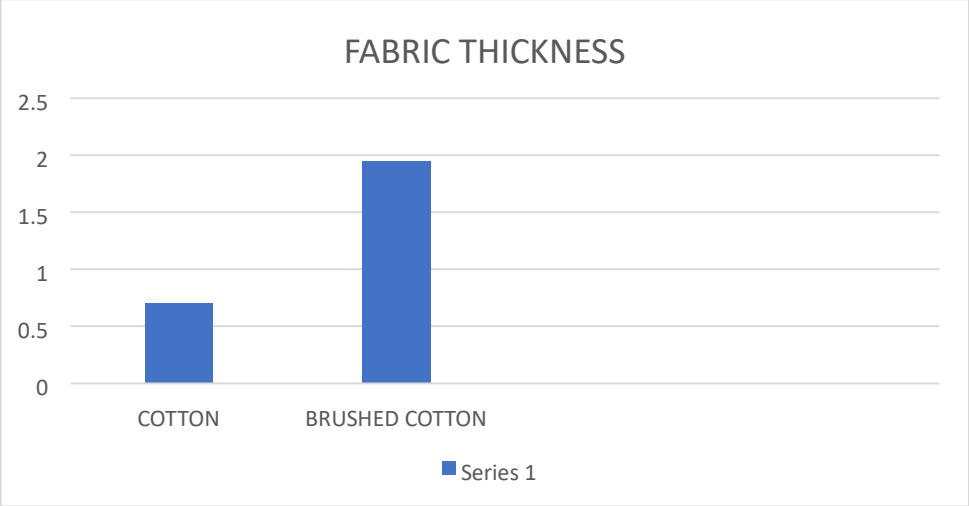

FIGURE 10 FABRIC THICKNESS GRAPH

4.3 TENSILE STRENGTH:

Tensile strength is a crucial mechanical property of textiles, indicating the maximum load or force a fabric can withstand before it breaks or tears under tension

S NO	POINTS
WOVEN	5.24
KNITTED	4.87

TABLE 3 TENSILE STRENGTH

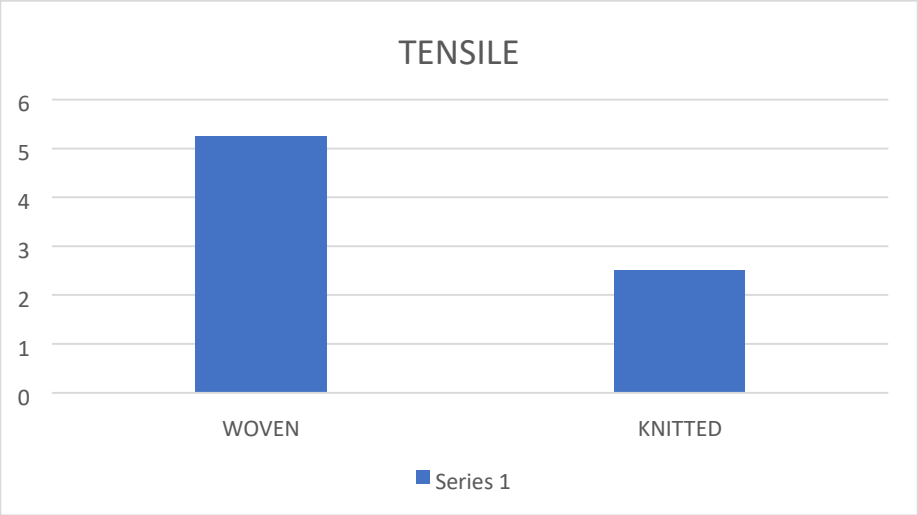

FIGURE 11 TENSILE STRENGTH GRAPH

4.4 ABRASION RESISTANCE

Abrasion test is crucial for determining how well a fabric with stand wear and tear caused by rubbing against rough surfaces or repeated friction. The abrasion resistance of knitted highest point by values holder where the fabric sample is mounted, and a rotating abrasive disc

POINTS	W BEFORE(1)	W AFTER(1)	W BEFORE(2)	W AFTER(2)
10	8.17	8.30	8.63	8.20
25	8.30	8.30	8.21	8.25
50	8.20	8.20	8.10	8.12
75	8.63	8.30	8.55	8.20

TABLE 4 ABRASION TEST RESULTS(WOVEN)

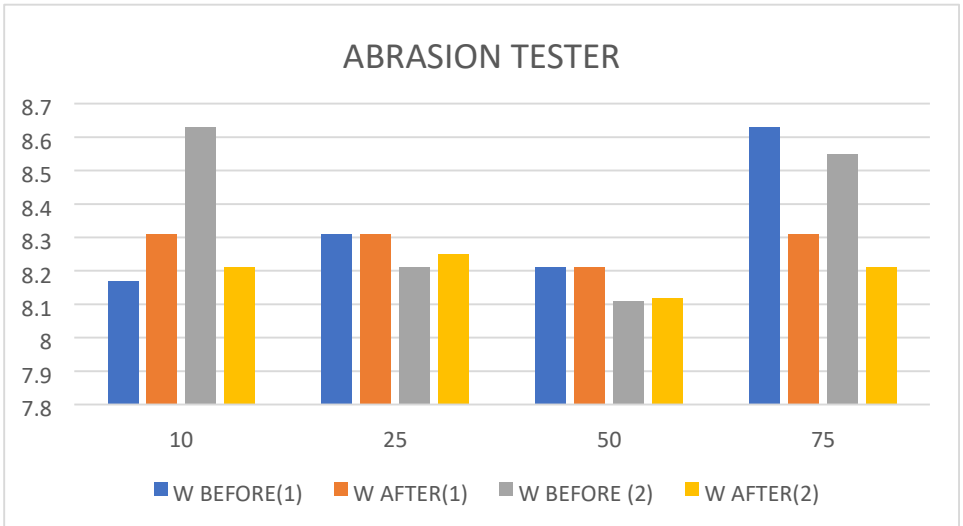

FIGURE 12 ABRASION GRAPH

POINTS	K BEFORE(1)	K AFTER(1)	K BEFORE(2)	K AFTER(2)
10	14.081	13.2	14.1	13
25	15	14.3	14.8	14
50	14	14.3	13.9	14.2
75	13.4	12.7	13	12.2

TABLE 5 ABRASION TEST RESULT(KNITTED)

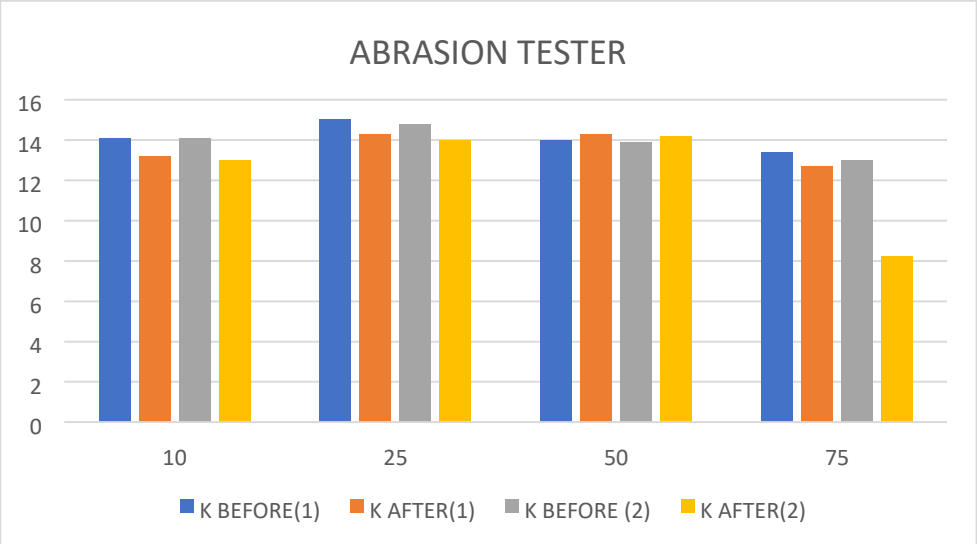

FIGURE 13 ABRASION GRAPH

4.5 AIR PERMIABILITY:

Air permeability in textiles refers to the ability of a fabric to allow air to pass through it. This property is crucial in determining the comfort level of clothing and other textile products, particularly in terms of breathability and ventilation.

SNO	POINT 1	POINT 2	POINT 3
WOVEN	600	90	28
KNITTED	650	80	28
KNITTED WOVEN	900	100	30
WOVEN KNITTING	900	90	60

TABLE 6 AIR PERMIABILITY

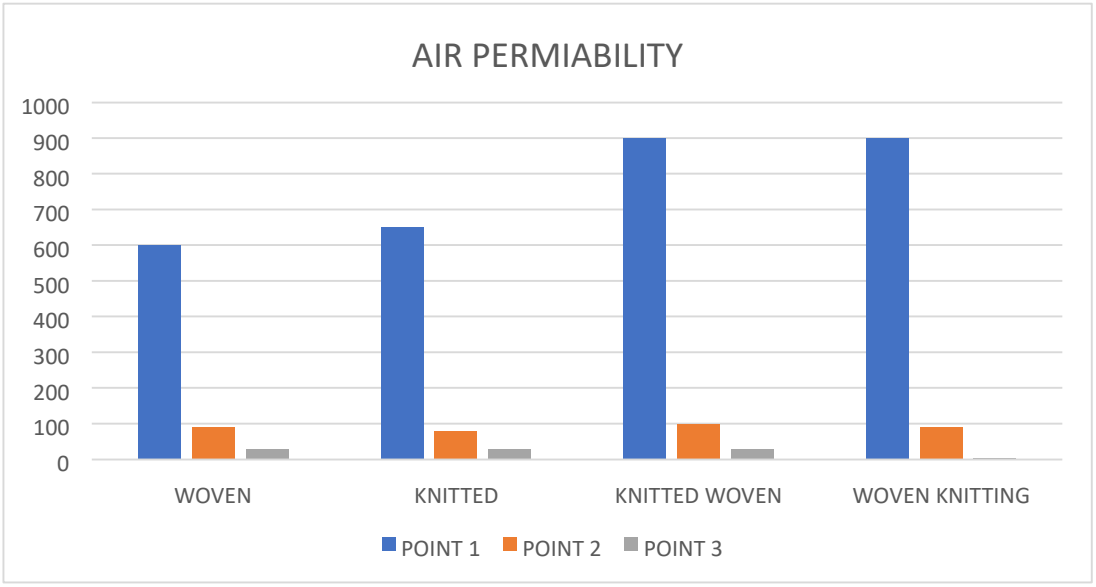

FIGURE 14 AIR PERMIABILITY GRAPH

4.6 SLECTED DESIGN:

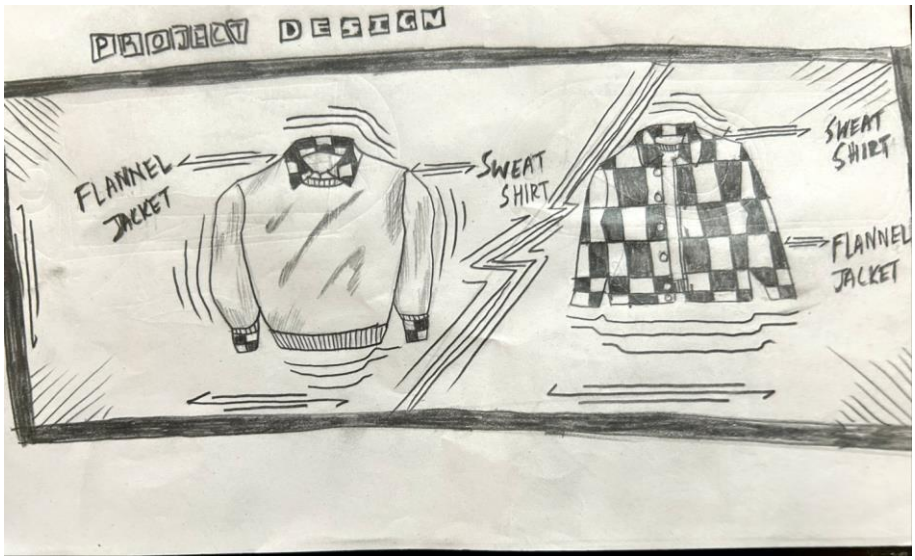

FIGURE 15 SELECTED

5.CONCLUSION

In conclusion, double sided jacket represent a unique style, sustainability, and style that resonates with consumers seeking authenticity and fashion. Throughout this exploration, it becomes evident that double sided jacket offer more than just a garment. They emody a narrative of resilience, craftmanship, and social responcibility.

Consumer reception towards duble sided jacket is largely positive, driven by factors such as sustainability, heritage, fashion appeal, and exclusivity. While challenges such as price perception exist, effective communication and educational initiatives can help overcome these barriers and foster greater acceptance of double sided jacket among consumers. Looking a head, the future of double sided jacket holds promise ass an emblem of sustainable fashion. Brands that continue to champion double sided jacket can inspire a shift towards more conscious consumption patterns, promoting environmental and social equity with the fashion industry.

In essence, double sided jacket emody the spirit of innovation, sustainability, and heritage preservation, offering a compelling alternative to conventional denim while paving the way for more ethical and inclusive fashion landscape. As consumers increasing prioritize valuesaligned purchases, double sided jacket stand poised to make a meaningful impact, not just in wardrobes but in hearts and minds worldwide.

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