

Improving the Production Variables and Designing Innovative Complete Garment Pieces on Seamless Weft Knitting Machine

Prof. Rasha Abdel Hady Mohammed

**Prof. Dr. of Knitting Engineering and Technology Spinning and Weaving Department -
Faculty of Applied Arts - Helwan University**

racha_hady1@yahoo.com

Prof. Rawia Ali Ali Abdel Baqi

**Prof. Dr. of Knitting Engineering and Technology Spinning and Weaving Department -
Faculty of Applied Arts - Helwan University**

dr.rawiaali@yahoo.com

Researcher. Doaa Mohamed Abdel Gawad

Faculty Of Applied art 6 Oct university

doamohamed20483@gmail.com

Abstract

Knitted fabric industry has developed greatly in the world, especially in recent years, to the extent that it has become competitive with woven fabrics; In the modern era, this type of construction has spread rapidly in various industrial fields due to the development of the properties of the used yarns with the consumer acceptance of knitting products of all kinds on the basis that they are in line with fashion and give comfort in terms of flexibility and good suitability for the final use, in addition to the cheapness of their price due to the low costs of their production. The progress and development of the production of knitting machines to the expansion of the use of knitted products, not only in the field of traditional clothing, but also entered these fabrics in industrial uses, home furnishings, sports clothing and others.

The aim of this research is to design and produce complete innovative knitted pieces with functional and aesthetic properties using new techniques by adapting the capabilities of the circular seamless weft knitting machine.

Six pieces of women's home clothes of different designs were produced using different materials and yarns. Nylon was selected with Lycra material to produce all research samples, with the difference in yarn count, Nylon count 20 (1/20/20) ,40 (1/34) and 70 (1/78/68) denier with Lycra count 20 denier All samples and dressed pieces are designed and produced on Seamless Weft Circular machine with Gouge 28 using different designs of executed pieces. Laboratory tests were conducted to evaluate the functional properties of the vector wear pieces, taking advantage of the capabilities of the used machine and specialized design programs to reach the best production specification.

By conducting a statistical analysis of the results, it was found that there is an effect of the difference in yarn count and the executed design on the functional properties of all produced pieces of clothing (cloth thickness (mm) - weight per square meter (g/m^2) - air permeability cm/cm^2 . Bursting strength (Pa)) to reach the best standard specification for production.

Keywords:

Weft knitting ,Structure ,Seamless machines