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Performance evaluation protocol for digital fitting systems —

Part 3: Digital fitting performance - Gap

Protocole d'évaluation de la performance des systèmes d'habillage virtuel —
Partie 3: Performance de l'habillage virtuel - Écart

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 133, *Clothing sizing systems - size designation, size measurement methods and digital fittings*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Digital fitting systems are used more frequently for evaluating the fit of garments without making actual physical patterns or physical garments. In a digital fitting system, a virtual garment is made using virtual patterns, and the fit of physical garment on a physical human body is assessed by draping a virtual garment on a virtual body or a virtual fit mannequin (fit form) model. Such system is useful for designers, manufacturers, educationalists because the system helps to improve the fit of garments and productivity.

The use of the digital fitting system, employed to evaluate the suitability of a real garments on real human body with the use of virtual garments on a virtual human body in virtual space, is growing in popularity. The system eliminates the need for physical garment production with fabric in product evaluation. Using a computer-generated virtual garment pattern, the virtual garment is created and tested on either a virtual human body or a virtual fit mannequin (fit form) model. It benefits not only those engaged in garment design but also consumers at the time of garment purchase, with better fit and wider choice of sizes in mass-produced products.

Digital fitting technology is still developing, and there is a wide range of differences in the specification and performance between digital fitting systems. This makes it difficult for users (designers, manufacturers, educationalists and retailers of garments) to select an appropriate system for their purposes.

This document evaluates gap, including garment pressure, which is an important factor in wearing comfort.

The users of this document are those users planning to install or update digital fitting systems. This document will help and provide judging criteria for selection of digital fitting system when garment designer or pattern engineer create virtual garment patterns and evaluate fitting performance to virtual fitting body.

The document should be viewed or printed in colour to clearly understand the performance evaluation as indicated in the figures.

Performance evaluation protocol for digital fitting systems —

Part 3:
Digital fitting performance - Gap

1 Scope

This document specifies a protocol employed in evaluating the gap between the virtual garment and the virtual clone, the virtual twin or the virtual fit mannequin (fit form) model in the evaluation of the fitting performance of the virtual garment and the virtual human body.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
digital fitting system
qualitative and/or quantitative evaluation of overall and/or specific simulation garment fit through analysis of the distribution of surface strain, gap between body and garment, tension map, cross section, surface wrinkles, garment balance, etc.

3.2
virtual garment
three-dimensional clothing in digital form that exists in virtual space

[SOURCE: ISO 20947-2:2020, 3.1.3]

3.3
virtual human body
virtual human model based on actual body dimensions used for digital fitting in the apparel industry, including information such as size, shape, cross section, body texture and skeletal structure

[SOURCE: ISO 18825-1:2016, 2.1.1.2, modified — Notes to entry removed.]

3.4
virtual fit mannequin (fit form) model
virtual model based on approved dimensions used for draping and examining silhouette and fit of a garment in a virtual space used for digital fitting

3.5
virtual cross section
closed contour extracted from the plane cutting a virtual body segment perpendicular to its main axis or the three principle axes

[SOURCE: ISO 18825-1: 2016, 2.2.2, modified — Notes to entry removed.]

3.6
gap
space between virtual garment and virtual human body or virtual fit mannequin (fit form model) which is shown in virtual cross section

Note 1 to entry: The space changes depending on the weight of the clothes or the friction between the clothes and the body.

Note 2 to entry: Space shall be expressed with difference amount of square measure or girth length between virtual cross section of virtual garment and virtual human body or virtual fit mannequin (fit form) model or it shall be expressed with gap amount between the virtual cross section of virtual garment and the virtual human body or the virtual fit mannequin (fit form) model.

3.7
garment pressure
pressure (tightness) of a garment against a virtual body or a virtual fit mannequin (fit form) model

Note 1 to entry: Pressure is affected by gravity, friction, design and material properties.

4 Functions

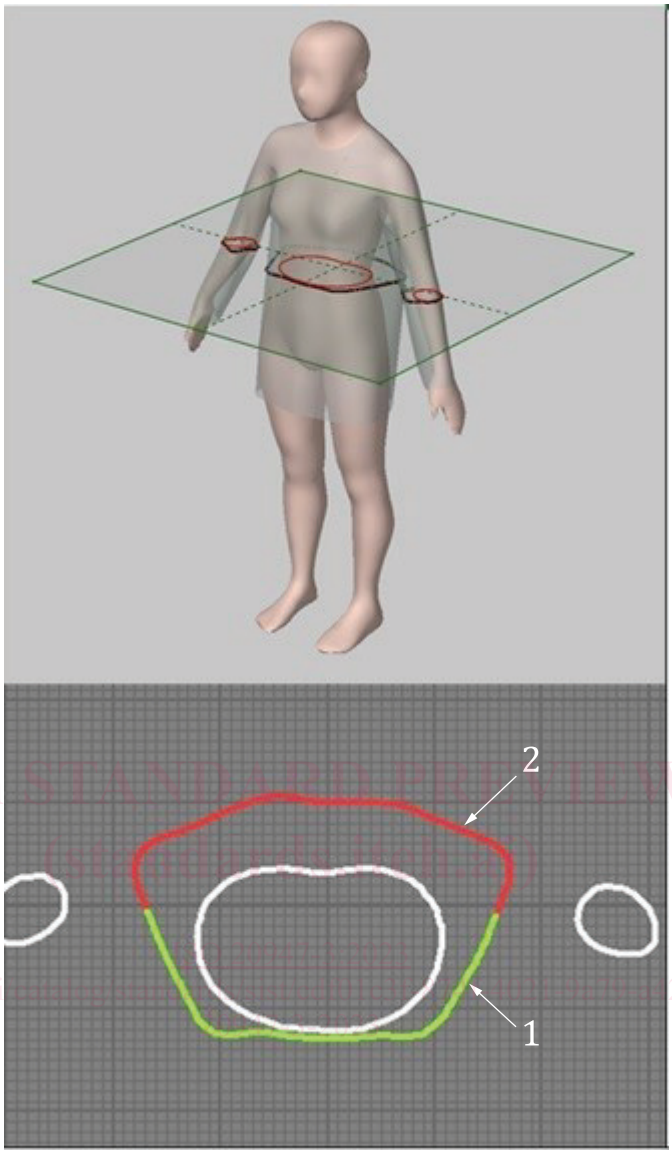
4.1 General

The digital fitting system has six functions as given in 4.2 to 4.7.

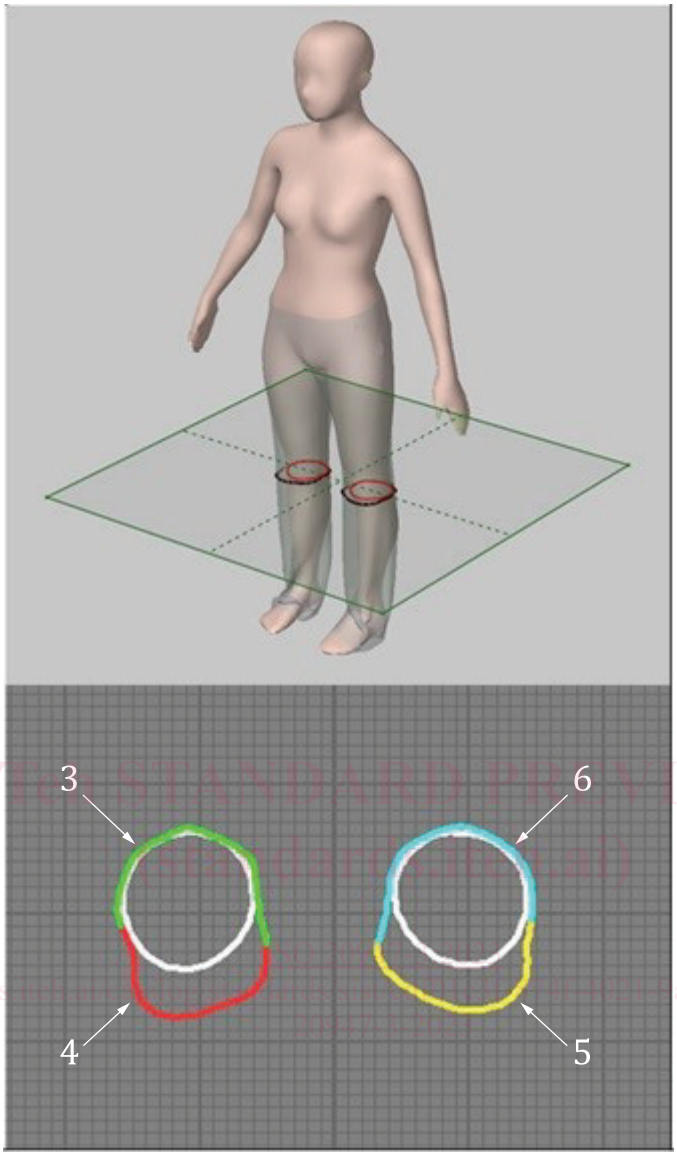
4.2 Function to measure the perimeter on the virtual cross section

4.2.1 Function to measure the perimeter on the virtual horizontal cross section

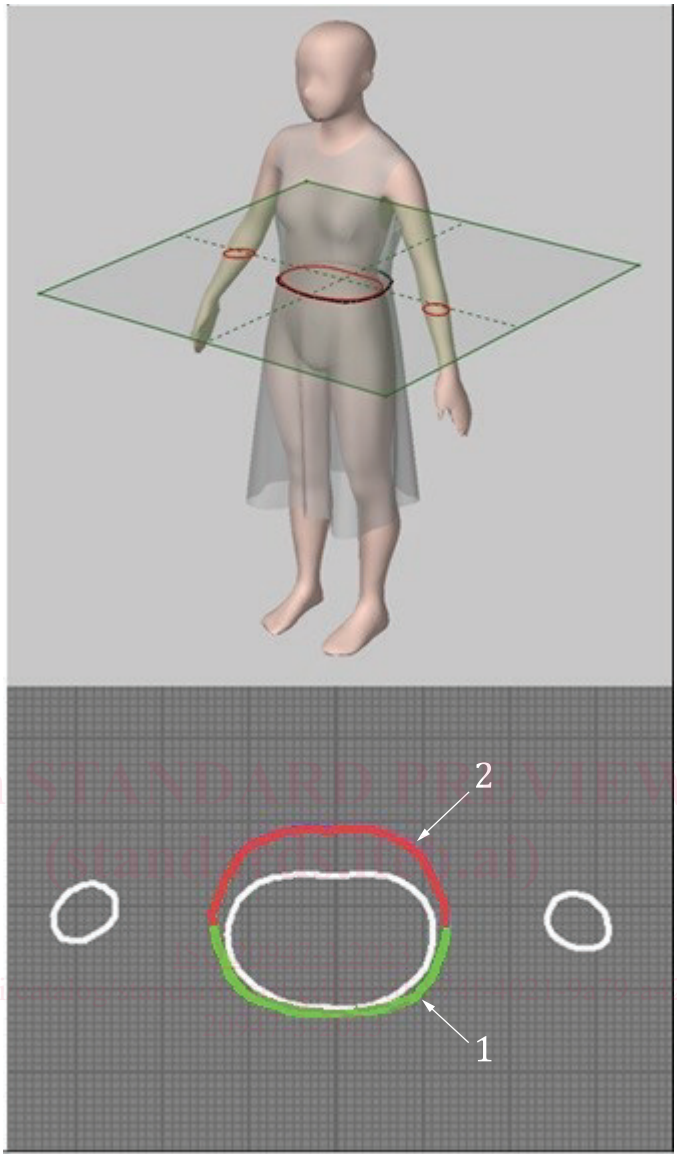
This function measures the perimeter of the virtual garment and the virtual fit mannequin (fit form) model from any arbitrary point on the virtual horizontal cross section. See Figure 1.



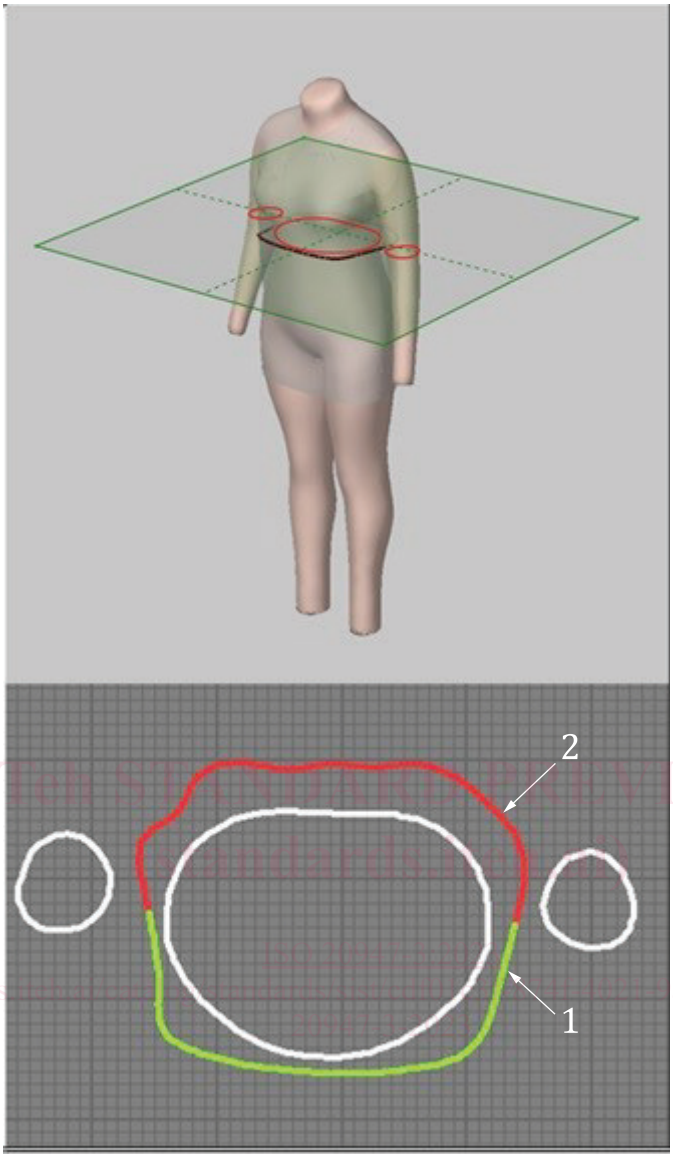
a) Virtual clone or virtual twin, upper body garment



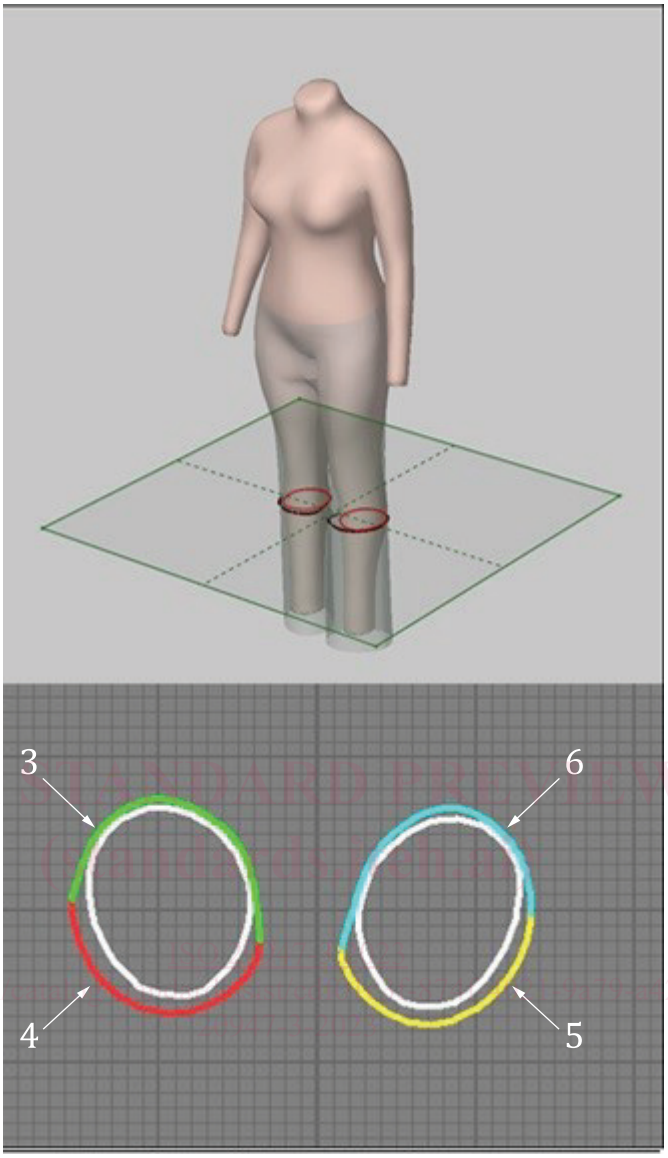
b) Virtual clone or virtual twin, lower body garment



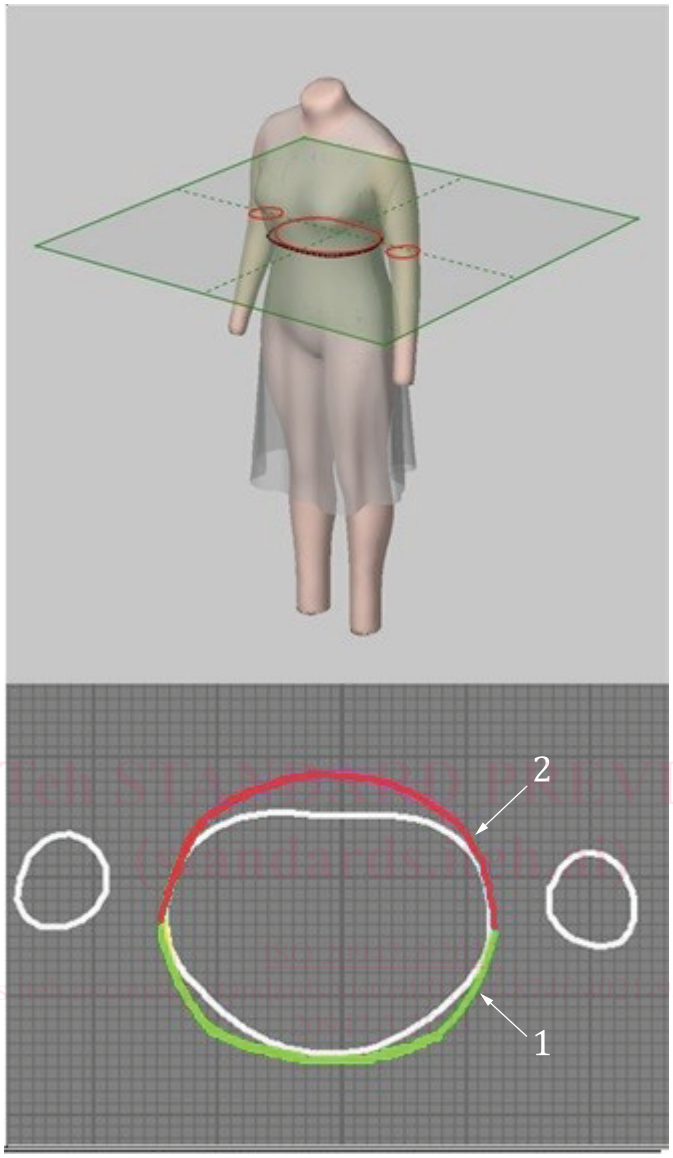
c) Virtual clone or virtual twin, whole body garment



d) Virtual fit mannequin, upper body garment



e) Virtual fit mannequin, lower body garment



f) Virtual fit mannequin, whole body garment

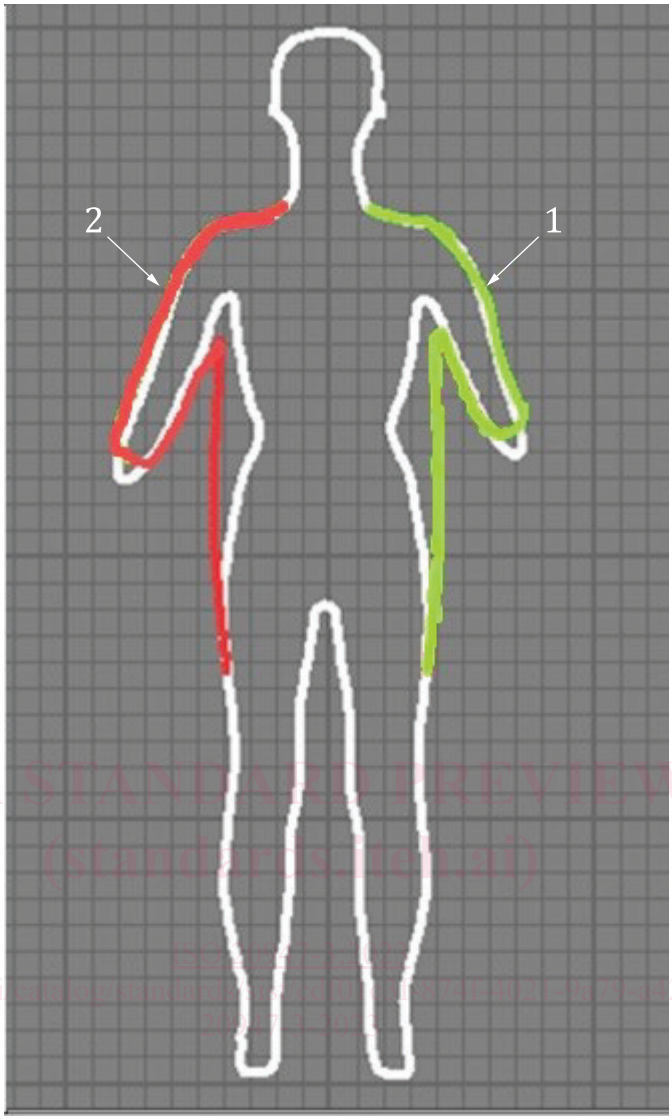
Key

1 silhouette line of front bodice
2 silhouette line of back bodice
3 silhouette line of right back pants
4 silhouette line of right front pants
5 silhouette line of left back pants
6 silhouette line of left front pants

Figure 1 — Example of the perimeter measured on the virtual horizontal cross section

4.2.2 Function to measure the perimeter on the virtual vertical cross section (front centre)

This function measures the length of the virtual garment shape and the virtual clone, the virtual twin or the virtual fit mannequin (fit form) model shape from any arbitrary point on the virtual vertical cross section (front). See Figure 2.



a) Virtual clone or virtual twin, upper body garment