IMPROVEMENT OF FOOTWEAR PRODUCTION USING ADDITIVE TECHNOLOGIES

[1]Liliia Chertenko, [2]Tina Lukashenko, [3]Tatjana Spahiu
[1] Kyiv national university of technologies and design, Ukraine
[2] Aequus Media Inc Vancouver, Canada
[3] Polytechnic University of Tirana, Albania

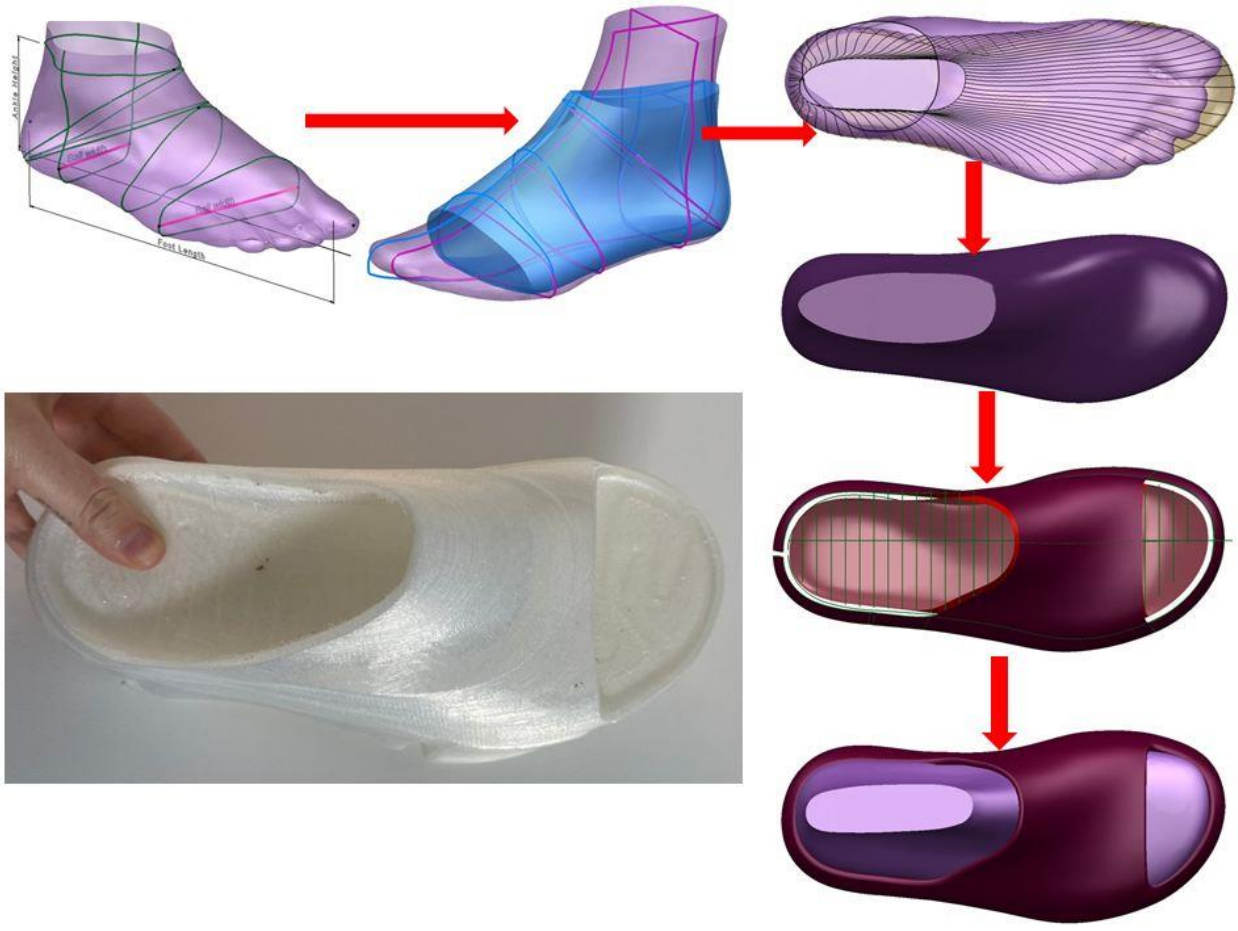
Abstract. Modern fashion is more than just a trend in the aesthetic properties of clothing or footwear. Trying to respond to the needs of society and to reproduce the reaction to the phenomena that concern society, fashion is becoming conscious, environmentally friendly and rational in response to these needs. Demanding tastes arriving from certain groups of consumers can no longer be satisfied by standard forms of fashion products, even with high quality. At this point fashion becomes intellectual and conceptual. Original fantastic shoe shapes combined with an ergonomic comfortable inner shape that matches the anatomical structure of the foot is one of the main future trends in order fulfil consumer's needs.

Environmental issues as pollution at the global level have always been on focus from various actors as governments and associations. They have the ability to impact that various industries that are responsible at a high percentage should change to a sustainable production. The case of fashion industry is part of it due to the high percentage of pollution caused in every step not only production but in a wide meaning during the product life cycle. Recycling is a process used to contribute to a sustainable production. But, especially for footwear products that are produced using different materials, recycling becomes a complicated process. However various well known sport shoe companies that try to give their contribution in reducing pollution try to recycle plastic and produce soles. this is the case of new technologies for production as additive manufacturing or 3D printing. As the opposite of traditional manufacturing method used shoe production, it helps in materials waste reduction and producing original conceptual monocomponent forms despite having a complex geometry. The great potential of using 3D technologies lies in the field of footwear and accessories, where prototyping technologies have found the widest application compared to the entire fashion industry.

3D technology allows designers to put any unexpected ideas into reality. The main criteria for choosing this process are functionality, innovation and optimization. Today, 3D printing is a way to go beyond the limitations of typical traditional technologies. After all, this technology of creating three-dimensional shapes helps to create completely original, non-standard and creative products. Actually, the product model is created in digital format with the help of numerous 3D CAD programs. A 3D printer only helps to materialize a physical product. Therefore, the method of embodying the designer's creativity, the transfer of his conceptual idea depends on the functionality of the selected software. Usually the original footwear 3D models are created in graphic 3D CAD - programs: Rhino,

3D Max, PowerShape, Blender, Cinema 4d, etc. They allow you to create a form of any complexity and convert it to a convenient 3D printer format as STL, STP, etc. The main advantage of 3D printing is the absence of production waste, higher environmental friendliness of the process and the absence of restrictions in the configuration of the printing object. This method is ideal for creating complex fantasy shapes of shoes, accessories, heels or soles.

However, the basis of any fancy shape of shoes is the ergonomic inner shape of the shoe, which is designed based on the anatomical structure of the foot. The correct form of a shoe last mainly provides convenience of footwear. Designing of the shoe last 3D shape also occurs in the environment of 3D programs using graphical 3D functions based on 3D foot scan. This method allows making such elements of footwear as soles, heels, continuous monocomponent footwear, profiled half-insoles, supporting anthropometric insoles, etc.



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