

“Modification of Microclimate Monitoring Jacket”

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I. INTRODUCTION

Smart and interactive clothing is a novel industrial area, which gives clothing additional functional properties. Such innovative garments are used in different areas – sports, medicine, entertainment, etc. Smart or interactive clothing often functions with integrated electronics and as a result garment can response in adaptive way to external stimuli, process them and output as new signals [1]. During previous research [2] the child's jacket with embedded electronics was developed that reacts to microclimate changes with the help of integrated electronics, signalling about the temperature and relative humidity data. This article describes improved version of jackets with some modifications.

II. IMPROVEMENT OF JACKET COMFORT CONDITIONS

As the first imperfection of jacket prototype distribution of electronic elements can be mentioned, that didn't fully conform to ergonomic principles both due to system placement and size of elements. In a modified prototype electronic elements are placed in zones where influence of inner and outer strain to clothing and body is lower (based on analysis of studies [3; 4]). Technical drawing of modified jacket prototype is shown in Fig.1.

To provide better under-garment microclimate, membrane is used as jacket basic material that is breathable and air permeable/waterproof. Membrane works both as a protective shell for electronics, protecting electronics from adverse contact with environmental moisture conditions (snow, rain), and provides good hygienic conditions for children body as well.

In addition ventilation areas in jacket are foreseen – in the back of jacket and in jacket underarms zippers are sewn that can be opened if it is too hot for a child.

III. ELECTRONIC COMPONENTS AND SYSTEM FOR MICROCLIMATE MONITORING JACKET

In order to optimize weight distribution and decrease risk of injuries, the electronic system is divided in two main functional parts and is placed on both sleeves. Other elements include temperature sensor, placed in the back, which senses the temperature inside the jacket, and two LED panels in the frontal and in the rear part of the jacket, which can be used both for microclimate monitoring and for safety/decorative purposes. Mode switching is provided by an embroidered touch sensitive switch placed in the collar – it can be used to switch operational modes of the jacket.

IV. ACKNOWLEDGEMENT

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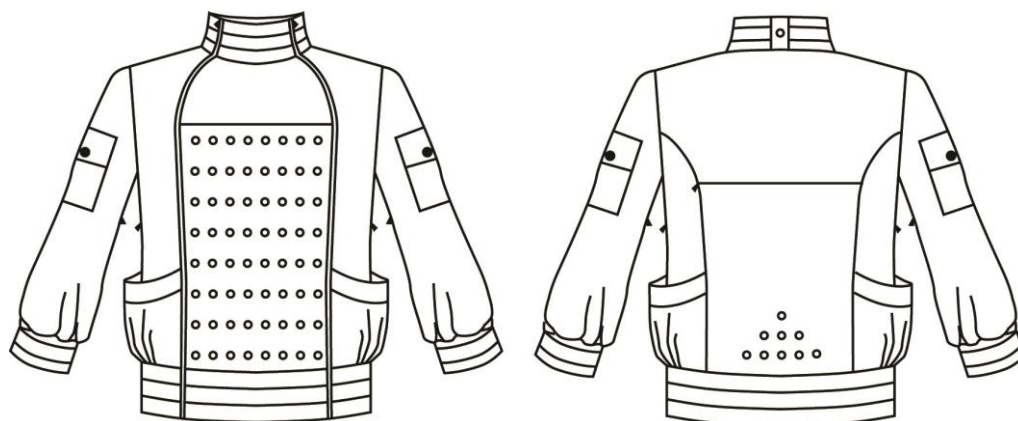


Fig.1. Technical drawing of modified jacket prototype