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Workloads and Standard Time Norms in Garment Engineering

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ABSTRACT

Possibilities of new methods for measuring loading and standard time norms are presented, as applied in the field of garment engineering. Measurements described are performed on modern measuring equipment designed to measure and perform computer analysis of temporal values of processing parameters in sewing operation and simultaneously record in two planes using a video system. The measuring system described was used to investigate sewing operation for the front seam on a ladies' fashion suit, 52 cm long. For the operation investigated, method of work employing the MTM (Methods Time Measurement) system with analysis of basic movements was selected. The MTM system used shows that normal time for the operation in question is around 429.3 TMU (15.5 s). Investigations of workload imposed on the worker according to the OADM method were done simultaneously, and total ergonomic loading coefficient of $K_{er}=0.082$ was established, thus determining the time necessary to organise the process of work as 464.5 TMU (16.7 s). Simultaneous measurements of time and dynamic changes of processing parameters, as well as logical sets of movements, are important for defining favourable operation structures, time norms, ergonomically designed systems of work and workplaces in garment engineering, as early as in the phase of designing operations. The investigations described make possible to find optimal distribution of working elements and zones of reach important for ergonomic designing and/or re-designing of workplaces, which results in considerably reduced level of fatigue in work, optimal quality level, higher degree of utilisation of equipment installed and lower manufacturing costs.

KEYWORDS: garment engineering, sewing process, standard time of norms, motion timestudy measurement (MTM), workloads

1. Introduction

Processes of garment production belong to the so called »piece-type« of production processes (assembling type), while the work is performed on production lines, including a number of technological operations. Each of them is of a rather short duration, each is highly repetitive, and exerts a considerable psychical and physical strain on the worker. To organize

this type of production successfully, and having in mind unbroken material flow, it is necessary to be familiar time norms, as a basis for defining optimal methods of work, more favorable structure of the operation in question, machine utilization ratio, worker load and hourly production.

To be able to establish correct time norms as a basis for organizing production processes, it is necessary to have an overall view of all the