Future Applications of DHM in Ergonomic Design

Abstract:

Until now DHMs are especially used to design the dimensions of products and production assembly according to anthropometric demands. Recently DHMs are additionally equipped with strengths simulation so that also the dimensioning of reaction forces is possible. First steps are done to describe and evaluate the contact between human body and environment. Some examples will be shown. However in this area further important steps are necessary. Especially the self paced calculation of posture depending on this contact is to be realized. Some proposals exist for the contact of seat and body. Also first basic research is done in order to simulate motion behavior. Especially the detection of "leading body elements" as basic idea for this simulation can be seen as an initial step to generate modeling of cognitive human properties. However, in order to realize it the simulation of the properties of sense organs is necessary. Certain properties of the eyes can be simulated rather simple. Meanwhile some experience exits to understand the glance behavior depending on specific tasks (e.g. car driving). That can serve as basic for input to cognitive models. The output of these can be the track in space of the leading body element. On the other hand sensor organs properties in the field of hearing and climate are possible. In both cases the more difficult problem is to simulate the properties of the environment. General application field of these future development is the computer aided ergonomic design of workplaces in production lines and of products especially vehicles already in the definition and development phase. In this connection is to be considered that in future especially the design of
information flow in these areas becomes dominant. An example is the growing development of assistance systems in cars. The application of DHMs will allow achieving the connection between information design and the necessary geometric design of the equipment.