

TECHNICAL BASE OF THE LABORATORY

The Laboratory of Ergonomics and Occupational Environment Formation in the Institute of Production Systems Organisation continues the work of professors: Wojciech B. Jastrzębowski, Stefan Filipkowski and Zygmunt Zbichorski. The Laboratory is the only one at the Warsaw Polytechnics and one of the most modern centres in Poland dealing with problems of ergonomics and occupational environment formation, widely understood. Its didactic, research and servicing activities are executed on the basis of the most recent scientific achievements, modern equipment and unique hard- and software.

The global approach towards ergonomic issues is linked with the harmonious co-ordination of factors which affect man in the process of the job performance. The ergonomic formation of occupational environment also refers to the areas of enterprise activities: technical, organisational, economic, social, welfare environment as well as the management, computer, material, natural environment and occupational safety.

The methods and techniques of ergonomic research are applied in order to solve problems linked with design and correction of functional objects, machines, appliances, tools and the material occupational environment, in technical research and managerial activities, in planning of living conditions and recreation, as well as to improve ecological conditions.

Since 1995 the Laboratory of Ergonomics and Occupational Environment Formation has taken part in the piloting programme for introduction of quality systems in the laboratories of the Warsaw Polytechnics.

The Laboratory of Ergonomics and Occupational Environment Formation cooperates with numerous scientific centres abroad:

- *Centre for Research and Application in Ergonomics, University Lumiere Lyon, FRANCE
- *Centre for Industrial Ergonomics, University of Louisville, Louisville, USA
- *National Research Institute for Design, Department of Ergonomics, Kiev, the UKRAINE
- *IST GmbH Gernsheim, GERMANY

PRESENTATION OF THE LABORATORY OF ERGONOMICS AND OCCUPATIONAL ENVIRONMENT FORMATION



The laboratory is a unit in the organisational structure of the Institute of Production Systems Organisation and fulfils the function of a scientific-researching section. Professors and Ph.D. Holders as well as engineers - specialists in ergonomics, work organisation, physiology and sociology are employed there. Head of the Laboratory is Ms Ewa Górńska, Ph.D. Eng.

The Laboratory is equipped in stands for research of psycho-physical potential of man as well as to define factors which optimise structure of work stands and environment.

STAND FOR DESIGNING MACHINES, APPLIANCES AND COMPUTER-AIDED WORK STANDS



Computer-aided design allows for a quick ergonomic analysis of the scheme: man - machine - environment. The system Anthropos is one of the programmes complementing design development. This programme generates kinetic models of man of a given genuine size or in centile units and models of machines or work stands contained in computer memory in the scale as the model. Designing here means a proper selection of elements of work space and checking their mutual relationships.

STAND FOR RESEARCHING THE LIGHTENING



It permits to research parameters of optical radiation of the sources of lightening used in industry. It also permits to evaluate threats and loads. It is also possible to evaluate the way lightening affects quality and working capacity.

STANDS FOR RESEARCH OF PHYSICAL LOADS



They allow for evaluation of physical loads of man in the course of works and carrying a diagnosis concerning the influence exerted by work stands and their equipment on the work strenuousness.

Dosimeter and measurement appliance allows for evaluation of energetic, static and mono-type loads considered with regard to the character and contents of tasks performed.

STAND FOR RESEARCHING NOISE



Recognising and reducing threats resulting from the noise in the work environment is the task of the stand. Measurements and evaluation of the noise are made as well as means of eliminating or reducing harmful influence of the noise exerted on man in the course of the job performance. It can be done by limited emission of the sources of the threat, application of sound-absorbing materials or by using personal shields. Research is conducted regarding the influence of the noise on human organism.

STANDS FOR RESEARCH OF PSYCHOLOGICAL LOADS



They allow for researching psychological loads with regard to:

- obtaining information: interference signals, parallelism of signals, the same or similar contents, rhythm and number of sources,
- taking decisions: number of decisions, sureness of decisions, variety and automation, tension of decisions conditioned by time pressure,
- performance of work: precision, tempo, variety and complexity of the work,
- reduction of monotony,
- stating the time of breaks,
- selection of workers for the given type of the job,
- verbal reaction

STAND FOR RESEARCHING MICROCLIMATE



The stand enables to measure, with the help of appliances, thermal loads which affect man in work environment, to research changeability of climate conditions on work stands with regard to the intensity of the parameters of the microclimate and evaluation of the space cooling capacity.

SCIENTIFIC RESEARCH - DIRECTIONS

- * appropriation of work stands for the psycho-physical potential of man,
- * formation of occupational environment according to the requirements of occupational safety and ergonomics,
- * conformance with ergonomic design and diagnostic procedures in enterprise functioning,
- * modelling of factors affecting occupational environment,
- * researching the ergonomic aspect of the solutions applied in production processes and products,
- * promotion and information distribution concerning ergonomics by means of proper and international data base and software.
- * organisation of national and international seminars and scientific conferences.

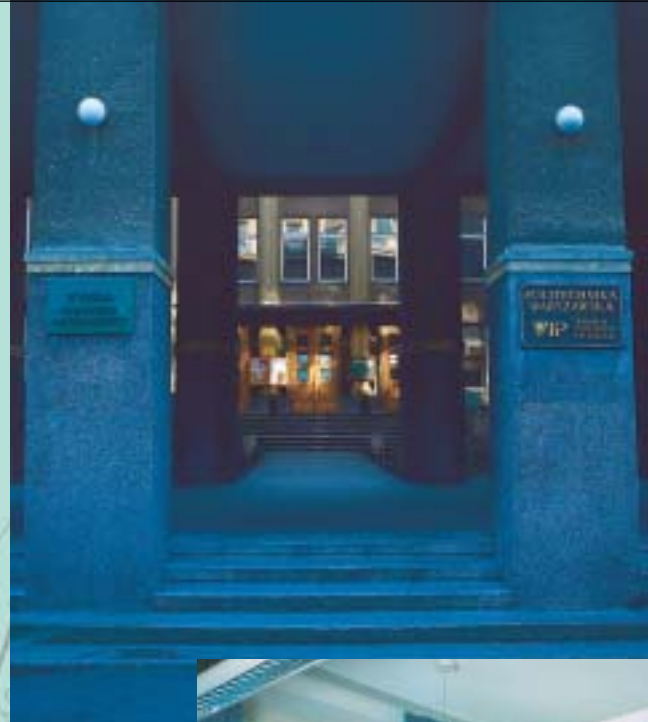
AREAS OF DIDACTIC ACTIVITIES

- * unaided performance of measurements basing on the research procedures and appliances used in ergonomic measurement,
- * presentation of practical aspects of ergonomics in conceptual and corrective activities,
- * national and international norms and standards, directives, ergonomic data bases and their use,
- * ergonomic design of technical solutions following the requirements of future users,
- * ergonomic evaluation of simple and complex production systems,
- * use of computer technologies for designing, diagnosing and evaluation of production systems.

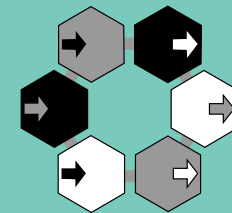
The didactic process is performed with the use of research stands in the laboratory which are appropriately equipped and organised.

SERVICING

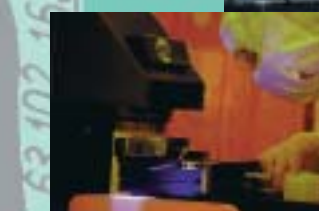
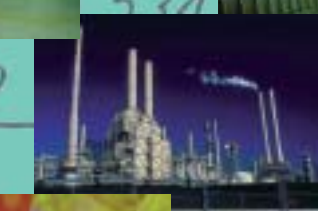
- * overall evaluation and diagnosis of working conditions at stands and in working spaces,
- * designing overall modernisation of occupational conditions in production spaces and in offices,
- * designing adaptation of the rooms in conformance with the requirements of ergonomics and occupational safety,
- * ergonomic evaluation of technical, technological and organisational designs,
- * ergonomic design of products, stands and working space,
- * distribution of knowledge and organisation of instructions in the area of ergonomics, occupational safety, work organisation, communication and negotiations in management.



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FACULTY OF PRODUCTION ENGINEERING
INSTITUTE OF PRODUCTION SYSTEMS ORGANISATION



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