

C816515 : MAJOR INDUSTRIAL ENGINEERING

KEYWORD: HEAT LOAD / PHYSICAL FATIGUE / EMG / PSYCHROMETER / OXYGEN CONSUMPTION.

PANU BURANAJARUKORN: EFFECTS OF HEAT LOAD ON PHYSICAL FATIGUE AT WORK. THESIS ADVISOR : PROF. KITTI INTARANONT, Ph.D., 154 PP. ISBN 974-636-385-9

This research was designed to study physical fatigue at work due to heat load in three sections of a foundry shop in Saraburi province ; furnace controlling, molds pouring and numbering on sand molds. Three ergonomics methods were employed to evaluate external and internal workload : 1) recording of hot environment of the work stations and job descriptions, 2) objective testing of physiological strain and musculoskeletal disorders, and 3) subjective testing using questionnaires.

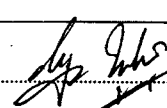
The results from the evaluation of physiological strain and heat load are within safety limits which can be concluded as follows :

- 1) In the furnace controlling section, work load was considered to be moderate. This was because work organization, which consists of work-rest schedule and workplace rotation, is adequate. The results from EMG studies indicated that materials handling and slag removal activities caused higher load at low back, and probably greater than the safe limit. To reduce the back load, the recommendations are : the use of trolley, correction of lifting posture, adjusting the work height of mixing substance area, removing small amount of slag but more frequently and decreasing the length of slag removal handle. There is no need to specify rest period for this section because the workers exceed the safe limit only slightly and for just 20 minutes out of the 90-minute cycle.
- 2) In the molds pouring section, work load was light since required energy expenditure was less than the safe limit. However, higher values of oral and skin temperatures were recorded because workers worked continuously in hot environment without a cool place to work and rest. This problem could be solved by improving the resting and working areas as in the furnace controlling section. No evidence was found that showed that any musculoskeletal problems were created in this section.
- 3) In the numbering sand molds section, work load was acceptable but the musculoskeletal complaints were severe due to repetitive work, bad working posture and long standing time. This may be corrected by the adjustment of the work height by lowering the standing level of workers, the use of modern tools to number sand molds, and the provision of the sit-stand chair. For other problems, such as environment and psychological stresses, the management could provide adequate individual protective equipment. Work organization could also be improved using job rotation and recreational activities.

ภาควิชา..... วิศวกรรมอุตสาหการ

สาขาวิชา..... วิศวกรรมอุตสาหการ

ปีการศึกษา..... 2539

ลายมือชื่อนิสิต..... 

ลายมือชื่ออาจารย์ที่ปรึกษา..... 

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....