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KEYWORD: FATIGUE LEVEL/SHIFT WORK/FUZZY SETS

CHARTCHAI USADORNSAK : IMPACTS OF TASK AND SHIFT WORK ON FATIGUE
LEVEL : A CASE STUDY OF A SANITARYWARE FACTORY. THESIS ADVISOR :
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This research was conducted under actual industrial operations at a sanitaryware factory in Pratumthanee province. The objectives were: 1) to study the relationship between task and shift work which affected the fatigue level using the fuzzy set theory, 2) to evaluate the fatigue levels of different tasks and shift works, 3) to compare physical fatigue and mental fatigue, and 4) to develop the applications of the fuzzy set theory in the field of work fatigue.

The project was carried out in three departments, spray department, kiln department and inspection department. Twelve male workers, four from each of the three departments, were used as subjects in this study. The shift work is classified into day shift and night shift. The fatigue level was determined from the heart rate, the flicker fusion frequency, the reaction time, the hand grip strength and the questionnaire. The results were analyzed by statistical methods and by the fuzzy set theory.

In conclusion, tasks, shift works and outputs had high effects on fatigue level of workers, respectively. The implication was that the productivity of this factory could be improved using appropriate industrial engineering techniques. This was because the output was ranked third as a contributing factor of the fatigue level. Workers working in the spray department had higher physical fatigue because of high intensity of lifting activities. Workers working at the inspection department had higher mental fatigue. This was due to higher visual load. The result also showed that night shift work caused less fatigue level than that of day shift work. It was obvious that night shift workers could not have enough rest during the day resulting in less work and less production output. Furthermore, work at night received less control from the supervisor.