

Ergonomic initiatives for machine operators by the Swedish logging industry

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Abstract

In 1994, the Swedish Work Environment Authority (SWEA) considered to regulate the amount of working hours in a logging machine in order to force an increased use of job rotation. Occupational neck and shoulder disorders had been threatening machine operators' health ever since the late 1970s. Representatives of the logging industry argued that detailed regulations would not solve the problem. SWEA agreed to shelve the matter for 2 years and industry promised to take necessary measures. In 1996, the Labour Inspectorate investigated the industry's ergonomic initiatives. They found that awareness in combating health problems had increased. However, there was a gap between awareness and the ability to carry out improvements. In 1999, SWEA decided not to regulate working hours but strongly recommended the work teams to use job rotation. A minor follow-up in the year 2000 found work teams with both high production and low health risk, but also more specialised teams.

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1. Authority action for ergonomic improvement

Due to the high rate of musculoskeletal disorders among Swedish logging machine operators, the Swedish Work Environment Authority (SWEA) wanted to shorten the operators' daily working time in the machines. SWEA considered legal actions to force an increased use of job rotation. The Board wanted to achieve a maximum of 4 consecutive hours and a working day of maximum 6 h in the machine per operator. This decision was based on experience of greater variation in body postures and movements benefiting the operator's health (AFS, 1998). However, after a discussion with the logging industry in 1994, SWEA decided to offer the industry a period of 2 years to achieve a positive change of the problem.

1.1. A programme for action

To be able to carry through with a programme aimed at improving the working environment within the logging industry, the Forestry Vocational Board (a body dealing with vocational information, education, training and work environment) established a project group and a reference group. There the representatives from the forest corporations, the trade union, the contractors association and scientists formulated a "Call for attention", see Table 1. They stated "We shall emphasise the matters of production AND work environment", and the AND-project was created (Hagberg and Ronström, 1996). The aim was to support a programme that fully incorporated a better working environment, thus solving the operator's health problems. Joint task management, co-operation and the corporations taking responsibility for safety and health matters of employees and contractors were some of the key issues.

A major part, 80–90% of the Swedish logging industry responded to the appeal. The project group assisted the companies in the start-up phase and about

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Table 1
The logging industries call to “Develop Production AND Work Environment”

In forestry, we consider detailed regulation of the working hours to be most unsuitable
We are conscious of the need for increased job rotation in order to combat occupational health problems
The logging industry has the principal responsibility for providing all forestry workers—employees and contractors—with a satisfactory working environment
We believe that forms of production, joint task management and the working environment have to be developed in close co-operation and understanding
We realise the possibility of handling the occupational health problems through simultaneous development of working environment and production
We will carry out development in accordance with this statement during the next 2 years

5000 persons received direct information. At each of the 28 participating companies, a contact person at central level was appointed to work with the AND-project. There were also three seminars for the purpose of experience interchange between the companies.

One of the AND-project’s cornerstones was that each forest company should set out clear aims and actively support the process of achieving them. This should be done in close collaboration with employees and contractors. There were three categories of aims, namely: creating variation at work, building good physical working environment and gaining psycho-social health and physical fitness.

After the 2-year respite given by SWEA, the project group reported in 1996 on how far the companies had proceeded with the AND-project (Hagberg and Ronström, 1996). The results showed that 40% of the participating companies had managed to integrate the AND-project by supporting it on all corporation levels. About 20% of the companies were still in the start-up phase of the project, having received only weak support from their organisations. The remaining 40% had not succeeded in integrating the project in their production. In those companies, the working environment was governed by a person not working close to logging but whose main task was to meet official requirements.

SWEA was not fully satisfied with these results but could not decide, on the information given by the industry, whether or not to regulate. In the winter of 1997/98, the Labour Inspectorate (LI) evaluated whether the logging industry had the potential to reduce the machine operator’s health problems (Andersson et al., 1999). The aim was also to inform operators, contractors and forest companies about the risks for overuse symptoms and also about possible measures for the avoidance of musculoskeletal disorders and work accidents.

2. Aim

The aim of this paper is to present and analyse the LI’s investigation of whether the Swedish logging industry has successfully integrated work environment

management with production. LI’s intention was to pin down the functioning of the “AND process” and what had been achieved, compared with conditions before the project started. Information concerning the risks of musculoskeletal injury was used as a criterion of the logging industry’s achievement of its intention. The paper also presents the SWEA’s decisions regarding regulation of the working hours in the machines.

3. Working conditions in logging

Tree harvesting in Scandinavia is mainly done from a harvester and a forwarder (Gellerstedt and Dahlin, 1999). The machine operator chooses the tree to be felled, fells and delimits it, cuts the stem into logs and marks and sorts the logs into timber or pulpwood. The operator of the forwarder localises the logs, loads them on the forwarder with a knuckle boom, transports them to the landing, where they are sorted and piled into the different assortments. The work is done by a crew of 3–6 operators and is carried out in shifts. Three-quarters of all harvesters and forwarders are owned by contractors and one-quarter by forest companies.

After many years on the job, several forest machine operators are no longer able to maintain a high level of productivity. They may suffer from chronic fatigue or other illnesses, or have lost their motivation resulting in an inability to sustain a normal working tempo. In several questionnaire studies, 40–60% of the machine operators answered that they have suffered from pain or ache in their neck or shoulders during the last 12-month period (Bostrand, 1984; Jonsson et al., 1983; Pontén, 1988, 1991; Axelsson and Pontén, 1990 (see Fig. 1); Hänninen, 1992; Hagen, 1992; Dale et al., 1993; Törnqvist, 1998).

The forestry occupational physicians’ opinion in 1988 (Anon, 1988) were that the operator’s health is at risk when a high frequency of work cycles occur over prolonged periods of time. Few operators cope with sitting in a vibrating cab, continuously performing repetitive arm and head movements. Even machines with the highest ergonomic ratings were tiring for the operator, especially in combination with great attention

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