

EMPLOYEE-DRIVEN SCENARIO

- involving employees in developing and implementing new technology

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The paper describes an example of how to overcome the barriers towards innovation embedded in traditional thinking around design, development and implementation of new technology. A special focus will be given to the method 'Employee-driven scenario' developed to give operators a voice in discussion with managers, engineers and machine suppliers. The method builds upon scanning interviews, and supports the transformation of tacit knowledge from the 'old' way of working to the new production system.

Technology, tacit knowledge, employee-driven scenario, scanning interview

1 Introduction

For decades, improvements on health and safety have suffered from the Taylorist principles of designing short and simple work operations for each individual worker, splitting the execution of work from planning and control, and finally a specialization of support functions. This way of working has also been hampering job quality in a broader sense, and thus put improvements on these factors into a straight jacket that is to day being loosened, at least in the production taking place in the industrialised countries. The reason is that the preconditions for large-scale production of relatively uniform products have decreased. Since the last half of 1980'ies, many experts have argued that a win-win situation has emerged in which it is possible to improve companies' bottom line result through changes that at the same time will improve quality of working life. However, this common interest of employees and employers has been growing much faster than many workplaces have been able to implement. (Totterdill 2002).

However, the road to a permanent change of organisation of work has shown to be long and winding. Even if a company acknowledges that its way of organising work is inexpedient in relation to production and sales opportunities, there will be a considerable degree of inertia which curbs innovation. The system in force in a company has established a kind of balance throughout decades of development within a production paradigm based on Taylor's principles (Banke 1999).

2 Objectives

Many companies having experienced the need to change, might mistakenly have thought of employee involvement as a magic formula which will secure a successful change process. As it seldom turns out to be that easy, many managers have become disappointed due to own or others' experience. Three large-scale surveys at Irish workplaces covering more than 2,000 employers and 5,000 employees show that managers have low expectations from employees regarding more substantial change. It is concluded that this results in an under-utilization of employee potential (O'Connell 2003).

To improve the utilization of competencies in the whole organization it is mandatory to offer a fair platform for employees to participate. Methods like forum theatre, employee-made videos and photo safari have proved efficient to stimulate dialogue and robust change (Banke 2003; Hansen 2002).

The method of employee-driven scenario is developed in the project Workspace Design (Broberg 2007). The objective is to facilitate participation by operators in the development of new technology in co-operations with engineers, managers and planners. This approach has heritage from work on Human Centred Systems and Antropocentric Production systems over the last two decades (Brödner 1990).

3 Methods

The method Employee-driven Scenario is developed and tested in co-operation with the Danish company Aarsleff Pipe Technologies. This division of the company renovates pipe systems with trenchless methods. Part of the production consists of mixing polyester, and this is where the project was developed.

3.1 New production technology

At the company, an old technical system (a mixing plant) with many health and safety problems was to be exchanged with a new one. When the Workspace Design project was involved, the new technical system was already ordered, but management had only given a general information to the directly involved employees.

The task for the Workspace Design project was to create a dialogue between the company and the employees in order for knowledge of the new machines as well as the existing working methods and health and safety problems to be actively involved.

3.2 Scanning interview

Scanning interviews were carried out in order to detect problems and non-utilized possibilities connected to the implemented change. The uncovering of wishes and requirements in connection with the future workspace design has taken place through scanning interviews with selected persons from the production, production management, planning and maintenance.

The interviews shall serve to describe the normal every-day operation and to focus on 'critical incidents' and tacit knowledge. Emphasis is put on a thorough description of examples.

The examples are specifically used for a number of 'incident cards' to be used as input to the scenario process. Totally, 13 incidents were selected, representing:

- breakdowns
- maintenance
- flexibility/changeover
- planning and scheduling
- production management
- training/education.

3.3 Setting the scene

The method will be based on a journey in time. Thus, an employee-driven scenario is a stage setting of a future situation in which it is imagined that a change has been carried through.



Operators studying an 'incident card'.

Within this setting, everyday situations take place; a daily production including major and minor operational problems that are to be solved. In the employee-driven scenario, the participants imagine the new room arrangement and play typical situations, and in this way they will consider the interaction between a new machine and auxiliary tools, processes and collaborative routines internally in their own group and externally with other departments.

At Aarsleff Pipe Technologies, a dimensionally accurate 1:20 model of the production area was prepared. Small models of machines, racks, piping etc. having importance for the final design were cut in cardboard so that they could be moved around. Moreover, the model was furnished with Lego-men to illustrate need for manual functions and co-operation.

The model was placed on a table in the production room where the new machine would be placed. On beforehand, the planned walls, machine location, doors etc. were marked with tape.

The scenario was implemented during two half days, and everything took place in the production room so that the discussions based on the model could relate direct to the actual production room. The two scenario days were placed with two weeks in between offering the opportunity to look into tangible wishes and questions and to bring ideas and considerations to a head. For instance, the consulting engineers should proceed with technical questions to the German machine supplier and, if possible, have answers ready for the second meeting.



The model facilitated the dialogue between engineers and operators.

4 Results

The two scenario days were characterized by a large involvement from all participants. Input of incident cards concerning tangible actions gave the operators a central role as case specialists. And in this way it became clear and very concrete to everyone that the planned version of the new facility did not offer the required possibilities for experienced operators to handle extreme situations. Among other things, this became evident when it was decided that a vacuum tank placed according to plan drawings had to be moved to another room when an imagined but realistic breakdown was played based on an incident card. Also health and safety issues were discussed and decisions made.

The problems, wishes and suggestions that appeared during the play were maintained on flip-over, with Post-it's or other postings in the room. The company used this material afterwards to follow up on the suggestions and decisions.

"Initially, the starting point was to optimize the piping. However, now some quite different things have come into focus, and the facility will end up looking quite different than originally planned." (Consulting engineer)

"I am sure that we have saved a lot by doing it this way instead of making changes later." (Production manager)

"It's a very good idea to gather people from different departments in one room where we had time to really go deeply into design and layout. And the fact that it took place where we are to work in the future instead of in a conference room was really good." (Operator)



As the scenario took place in the future work room it was possible to make a simulation when-ever a specific issue was brought up.

5 Discussion and conclusion

The case has demonstrated a possibility to overcome the barriers towards innovation embedded in traditional thinking around design and arrangement of the workroom and development and installation of new technology. Employee-driven scenarios can make operators important stakeholders in process architecture. This will be brought about by involving the future users in the work performed by architects, engineers, machine suppliers and consultants in connection with major change projects. At the same time, this paves the way for a genuine win-win situation with improved job quality and a more flexible and stable production.

The experience shows that the broad involvement of users settles with the tendency that individual participating specialist groups sub-optimize by focusing on efficiency of exactly the element within the existing system that is the speciality of their field.

An employee-driven scenario offers:

- inclusion of employees at an early stage of development and implementation of new production systems
- spotlight on the tacit knowledge of machines, materials and processes that are the result of many years of work and problem solving

- a platform for tangible co-operation between management, employees and any external actors.

An employee-driven scenario implies:

- preparation *before* the employee-driven scenario in the form of scanning interviews with production operators, planners and managers in order to ensure authenticity
- that adherence of perceptions and decisions made in the process is ensured *successively*, for instance by using forms etc.
- that *after* implementation of the employee-driven scenario, the documentation of the scenario is maintained and used actively when changes are to be introduced in everyday life.



The production manager and the consulting engineers got a lot of questions to investigate before the second session.

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7 References

- Banke, P., Holsbo, A., Madsen, A.M. 1999 *New Organisation of Work. Not as Easy as You Might Think*, Copenhagen
- Banke, P., Hague, J., Hansen, T.L., Nørskov, E-C. 2003 *Moving beyond rhetoric: Creativity, organisations and performance*. In W. Fricke & P. Totterdill *Action Research in Workplace Innovation and Regional Development*. John Benjamins
- Broberg, O. 2007, *Sunde og Effektive Arbejdspladser med Workspace Design*. Magasinet Arbejds miljø 05/2007, 46-48

- Brödner, P. 1990 *The Shape of future Technology. The Anthropocentric Alternative*, London
- Hansen, T.L., Nørskov, E-C. *Kunst og klarhed - i arbejdslivets kompleksitet* 2002 in H. H. Larsen & C. Svabo *Fra kursus til kompetenceudvikling på jobbet*. København
- O'Connell, P.J., Russell, H., Williams, J. Blackwell, S. 2003 *The Changing Workplace: A Survey of Employees' Views and Experiences*. Dublin
- Totterdill, P. & Dhondt, S. & Milsome, S. 2002 *Partners at Work? A Report to Europe's Policy Makers and Social Partners*. Report of the Hi-Res Project (The High Road concept as a Resource) funded by D G Research of the European Commission