Investigating the reasons for bypassing and defeating protective devices of machines

**Project information**
- Duration: September 2003 - October 2005
- Participants: interdisciplinary project team (engineers, psychologists, ergonomists, technical supervisory staff, ...)
- Project phases:
  1. Analysis of the status quo
  2. Development and integration of methods of solution
  3. Publication of the results

**Aims of the project**
- Prevention of accidents caused by manipulation of protective devices of machines
  - Empirical analysis of the frequency and the reasons for manipulative actions at protective devices of machines
  - Development of methods of solution (based on specialist backgrounds)
  - Integration of all methods of solution and generation of a model of prevention (final plan)

**Analysis of the reasons for manipulations**
- Expert ratings
- Empirical analyses:
  - questionnaires (general part mainly applied by training centres, special part applied by the technical supervisory staff)
  - analyses of accident reports and further documents giving information about security behaviour

**First results of the expert ratings**
- Structure of reasons (as given in a brainstorming via e-mail)
  - Headlines:
    - obstruction by protective devices, organisational reasons (management, organisational culture, information/instruction management), constructive features (machine/protective devices), group processes, operator features (cognition of hazard, ignorance, autonomy), etc.

**Contents of the questionnaire(s)**
- General part (n = 600; mainly applied by training centres): frequency estimation, general estimation why different machines are manipulated, ...
- Special part (n = 300; applied in the factory by the technical supervisory staff when identifying a manipulated machine)
  - description of the machine, description of the manipulation, operating mode, improvements suggested by the operator (operator = expert), ratings concerning the extent of different manipulation reasons ...

**Methods of solution**
- An interdisciplinary project team develops different solutions based on the specific backgrounds of each team member
- The methods of solution focus on all levels: Man – Technique – Organisation
- Inclusion of the draftsman’s and operator’s points of view

**Model of prevention**
- Integration of all methods of solution
- Final plan, containing detailed chronological and practice-oriented suggestions

**Contact information**
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