



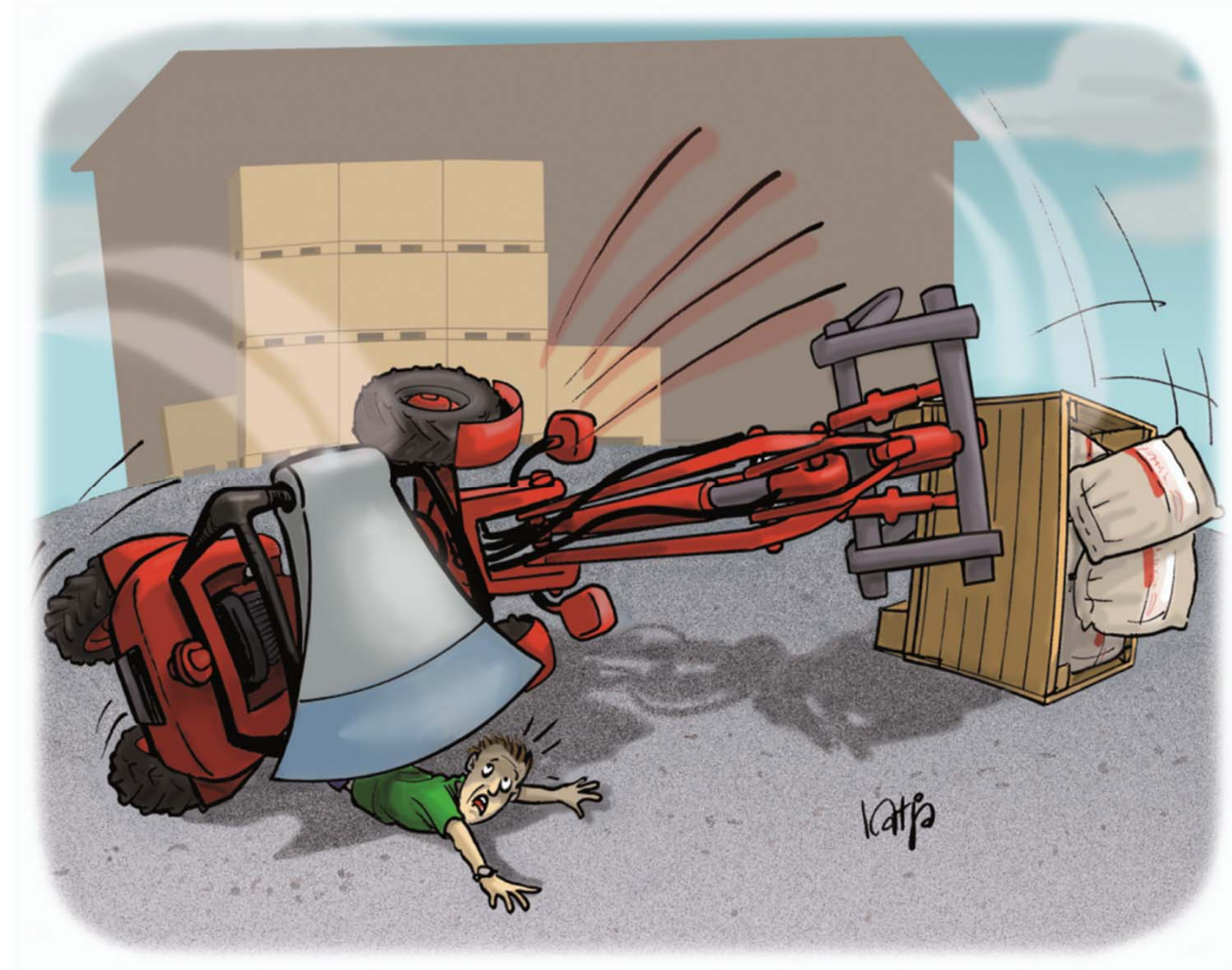
Restraint systems for self-propelled machinery: How to reduce misuse?

- CEN/TC150/WG11 (report of 2 meetings)
- Agricultural compact wheeled backhoe-loader:
Action of market surveillance in Switzerland (agriss)

Agricultural machinery safety – ETUI seminar, Brussels, 2013-03-04/05
Thomas Bachmann, agriss, Switzerland



Restraint systems for self-propelled machinery: How to reduce misuse?



- General discussion based on industrial trucks / FLT's (fork-lift trucks)



- Based on several fatal injuries, Italy has brought the topic about 'misuse of restraint systems' to the Machinery WG / ADCO.
- In cooperation with the Machinery WG CEN/TC150/WG11 had the initial meeting in December 2012 (WG11 deals with stability of industrial trucks):
 1. common understanding: Misuse of restraint systems is a general issue.
 2. NO common understanding: NOT using seat belts IS / ISN'T a reasonably foreseeable misuse ??

- Meeting on 20th February 2013 in D-Aschaffenburg
- Extract from the DRAFT meeting minutes:

4. Aims of Subgroup of WG11

First the group agreed on the aims listed below, The aims were evaluated at the end of the meeting at Aschaffenburg. Aims achieved were marked in green, unsolved aims were marked in red.

- a) **Common understanding: is not using a seatbelt a misuse?**
Who is responsible to stop it?
- b) **Other systems than seat belts instead of seatbelts as a standard.**
- c) **Standards for Restraint systems (efficiency, rigid), also other type of machinery with regard to lateral tip-over, machines with a cabin to be defined.**
- d) **What are the available statistics in the countries?**
- e) **What is available in regulations that the belt/restraint system is attached?**
What can we do that these obligations are fulfilled?
What can the HSE do that the regulations are obeyed?
- f) **Verify if seatbelt or restraint prevent from fatal accidents.**

Extract from the DRAFT minutes: 4/4

7. Misuse – foreseeable or not?

Employers have to make a risk analysis according the health and safety regulations. Unless the risk analysis clearly states that in a certain application it is safe to drive without restraint system, the driver has to use the restraint system.

There are two positions, the group did not find a consensus.

HSE:

Not using seat belts would be a misuse, which can be declared as foreseeable as it is predictable human behavior from the point of view of the HSE authorities.

Manufacturer:

From the point of view of the manufacturer it is not a foreseeable misuse

a) as the instructions manual clearly describes the hazard of misuse and

b) a hazard analysis made by the employer should clearly state the risk.

Furthermore it is the task of the employer to force the drivers to use the restraint system.

EN ISO 12100 describes misuse in chapter 5.4:

c) **Unintended behaviour of the operator or reasonably foreseeable misuse of the machine**

Examples include

- *loss of control of the machine by the operator (especially for hand-held or mobile machines),*
- *reflex behaviour of a person in case of malfunction, incident or failure during the use of the machine,*
- *behaviour resulting from lack of concentration or carelessness,*
- **behaviour resulting from taking the “line of least resistance” in carrying out a task,**
- *behaviour resulting from pressures to keep the machine running in all circumstances, and*
- *behaviour of certain persons (for example, children, disabled persons).*

NOTE Examination of the available design documentation can be a useful means of identifying hazards related to the machinery, particularly those associated with moving elements such as motors or hydraulic cylinders.

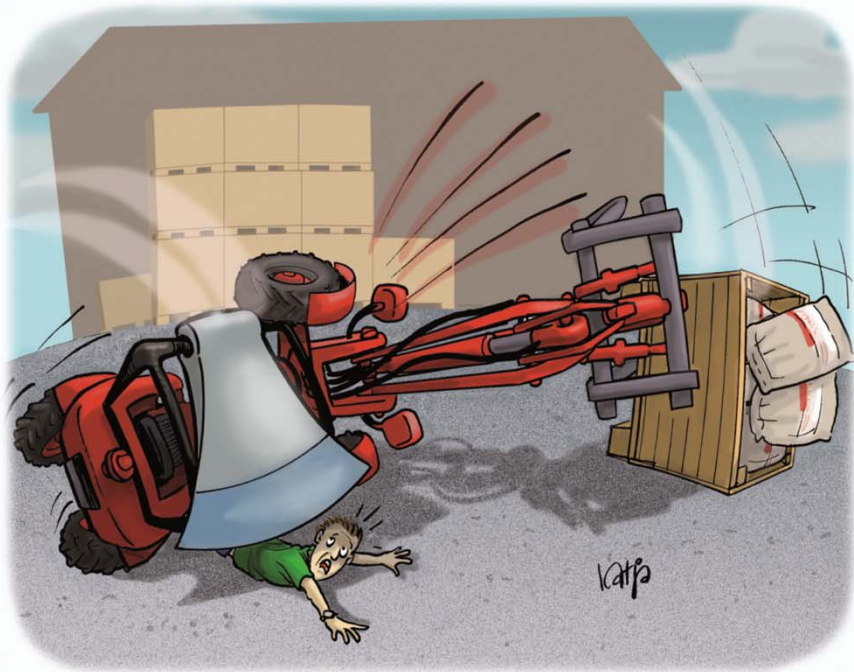
The manufacturer has to provide safe machines and take into account the foreseeable misuse.



Agricultural compact wheeled backhoe-loader



- Action of market surveillance in Switzerland (agriss):
1. ROPS, 2. FOPS
 3. Restraint system, not only simple seat belt
> reasonably foreseeable misuse





Risk of tipp-over





Risk of falling-objects





+/- Compact wheeled backhoe-loader (EN474-4)

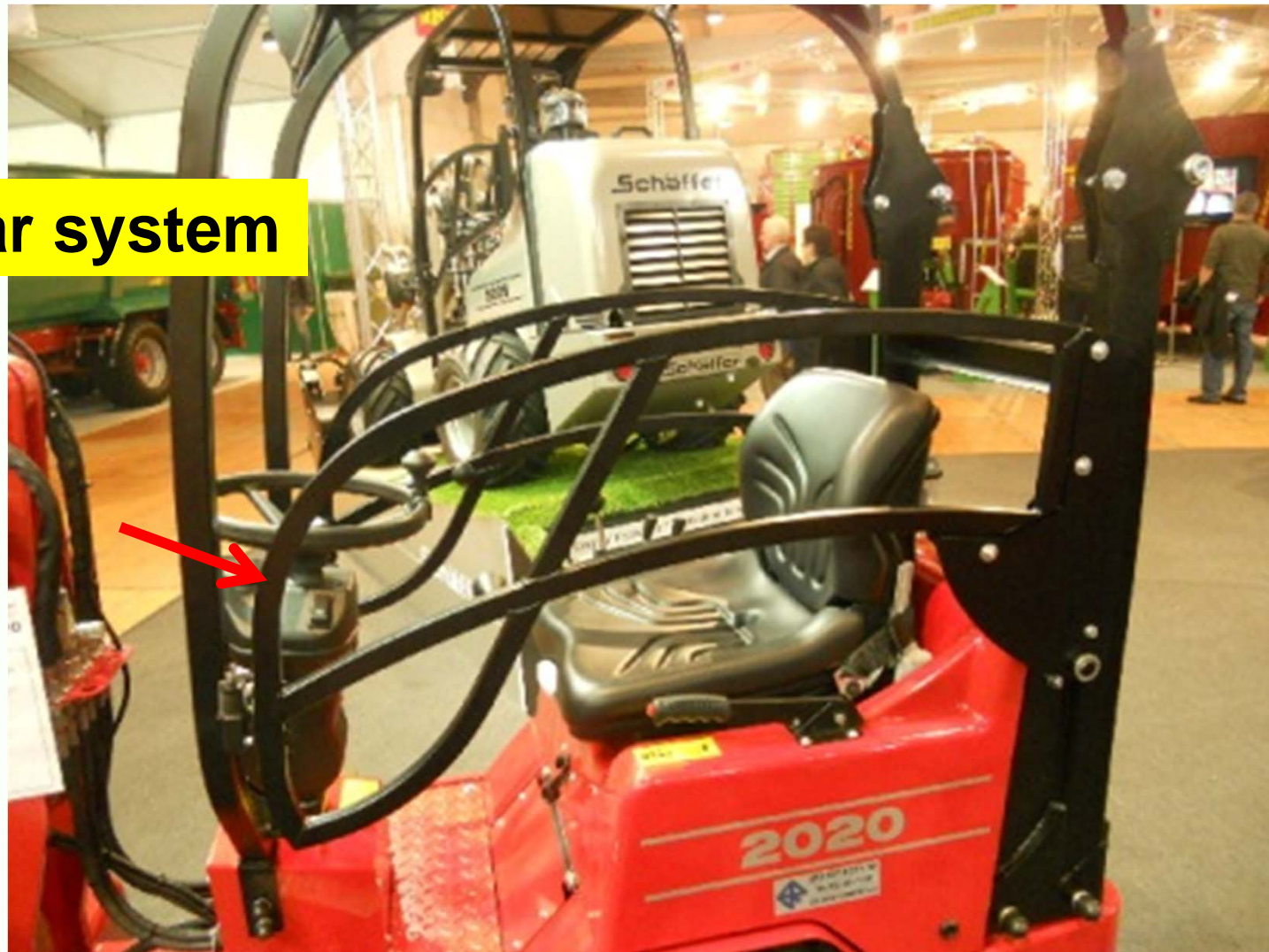
Door bar system



Door bar system



Door bar system



Door bar system





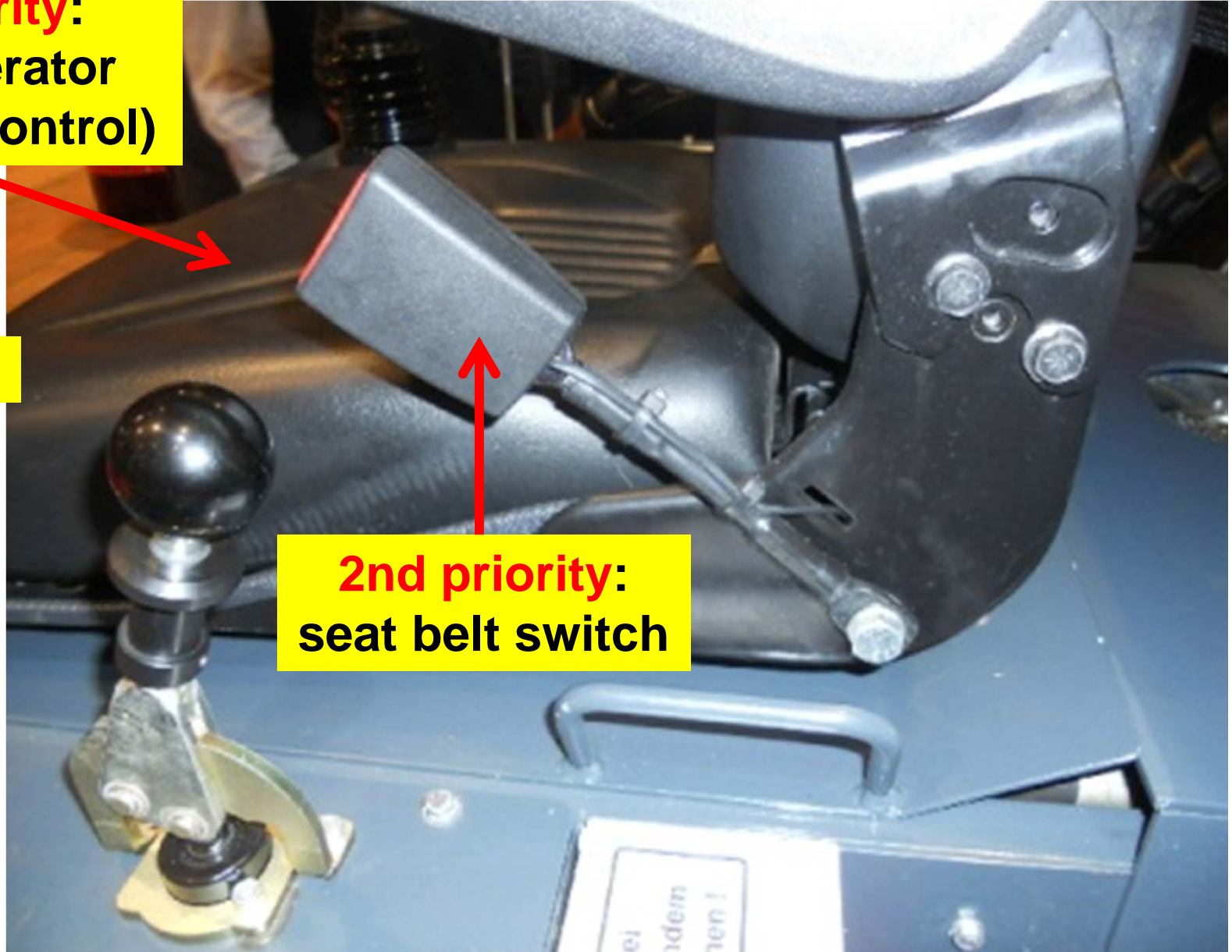
(too) simple door-bar system?

Interlocked seat belt

1th priority:
**OPC (operator
presence control)**

PLUS

2nd priority:
seat belt switch



Frame system



Other self-propelled machines



???



Other self-propelled machines

