

MOBILES FAHRSILOGELÄNDER/ MOBILE “DRIVE-IN SILO”-RAILING

1. Organisations involved

Technischer Aufsichtsdienst (TAD) der Landwirtschaftlichen Berufsgenossenschaft Nordrhein-Westfalen (Technical supervision of the German statutory accident insurance for agriculture in North Rhine-Westphalia).

2. Description of the case

2.1. Introduction

Dairy farms are expanding and there is an increased requirement for the storage of corn and grass in silos. They are often stored in so-called “drive-in” silos. These silos have no roof so the farmer needs to cover the silage with a tarpaulin. This often happens at a height where a fall could cause severe injuries or even death. In Germany, there is a legal requirement for fall protection to be used on storage facilities higher than one metre (safety and health protection regulations - Vorschriften für Sicherheit und Gesundheitsschutz VSG 2.2 paragraph 5).

In some circumstances there would be no protection at all without the railing, for instance:

- when the silage is stored higher than the sidewalls, and especially at the front where there is no wall present.
- when unloading the silo, one worker has to be on top of the load to pull the tarpaulin back from the edge.

The mobile railing was developed together with the German statutory accident insurance for agriculture to provide a cost-effective solution that reduces the risk of falls from the top of the stored silage. Since it is mobile, the farmer can use it on different silos depending on which is in use at any one time and does not need a railing for each silo they own or use. The mobile silo railing can be used in silos with a width from eight to ten metres. It is easy to install and offers good protection to the farmers who work on the silo. It has two stable railings at the sides and a tension belt in front. One can adjust the size of the railing to the size of silo and then put it on the wall coping with the help of a telescopic loader. The railing runs on wheels and can be moved back and forth, depending on the fill level of the silo.

Figure 1: Mobile railing (Source: G. Lange, German statutory accident insurance for agriculture).



2.2. Aims

The aim was to develop a railing at a reasonable price that prevents workers from falling off the top of a filled “drive-in silo” (Fahrsilo). This could be achieved with a mobile railing that can be fitted to different silos depending on which is in use. In addition, it should solve some of the shortcomings of other railings. One of the advantages of the new railing is, for example, the tension belt in the front or the ability to move it backwards and forwards depending on the fill level of the silo.

2.3. What was done, and how?

Several falls from this kind of silo led the German statutory accident insurance for agriculture in North Rhine-Westphalia to try to find a solution that protected the workers from falling. Different railings, some of which were previously invented and others which were commercially available, were assessed but they were all found to have shortcomings. The mobile silo railing was to correct these shortcomings. In 2007, the German statutory accident insurance for agriculture in North Rhine-Westphalia designed and constructed a prototype. This prototype was presented to stakeholder, from architects to end users, at the symposium for “Construction of drive-in silos”. The prototype was then displayed in the “Centre of Agriculture in North Rhine-Westphalia - House Riswick” where it is still in use on their drive-in-silos and can be inspected by interested parties.

To date, there have been no negative reports on the railing, apart from the fact that it cannot be used on all sizes of silos. The prototype can be used on silos with a width from 8-10 metres, but not for silos with a width over ten metres. For these silos, the railing has to be much bigger which makes it heavier and too difficult to install. The design team has proposed that the solution to this problem could be a lightweight construction of the railing but, as yet, no such railing has been constructed.

2.4. What was achieved?

- A prototype was constructed
- The prototype includes protection at the front
- Through its mobility, it can be installed on whichever silo is in use at the time
- The prototype is in use and on display for interested parties to view

2.5. Success factors

The mobile railing system developed by the German statutory accident insurance for agriculture in North Rhine-Westphalia, provides additional protection for workers and addresses the shortcomings of some traditional silo railings. The mobile railing is cost-effective since it can be used on different silos, relatively easy to install and it conforms to the new requirements, allowing farmers to comply with their terms of insurance.

2.6. Further information

Landwirtschaftliche Berufsgenossenschaft Nordrhein-Westfalen
(German statutory accident insurance for agriculture in North Rhine-Westphalia)
Email: mailbox@nrw.lsv.de

2.7. Transferability

The mobile railing can be used on different sizes of silo, so it is very flexible. However, compliance with the relevant state/country safety rules must be checked. For example, in Austria there must be a fixed barrier and so the tension belt at the front side would be deemed insufficient.

3. References, resources:

- Article about an invention of a young farmer, who wanted to construct a safety installation for his silos: http://iza.ch/alt/fileadmin/user_uploads/pdf/1362.pdf (accessed 28/10/10).
- Article about the prototype of the mobile railing, in the safety-newsletter of the German statutory accident insurance for agriculture, p. 12: http://www.lsv.de/lsv_all_neu/presse/sicher_leben_lsv_kompakt/nrw/2007/2007_06.pdf (accessed 28/10/10).
- Short article about the fixed railing produced by Kleck, in the safety-newsletter of the German statutory accident insurance for agriculture, p. 9: http://www.lsv.de/nos/5publikationen/kompakt/archiv/aktuell/lsv_04_06.pdf (accessed 28/10/10).
- Picture of the railing produced by “Kleck”. This is the same model, but it is not as mobile as the other one: <http://www.kleckagrar.de/02c6e69a760daa60d/index.php> (accessed 28/10/10).
- Personal communication with Georg Lange from the German statutory accident insurance for agriculture.