



ANTI-FALL SYSTEM IN THE TURNTABLE AREA OF TRUCK-MOUNTED CONCRETE PUMPS

1. Case metadata

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2. Organisations involved

peterbeton Rudolf Peter GmbH & Co. KG, gravel and concrete plant

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BG Rohstoffe und chemische Industrie, BG RCI

The BG RCI is the German accident insurance association for the sectors raw materials and chemical industry.

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3. Description of the case

3.1. Introduction

The company peterbeton Rudolf Peter GmbH & Co. KG was founded in 1954. Meanwhile, the company operates a network of ready-mix concrete and gravel plants in the delivery areas between

Bruchsal and Appenweier in Germany. Steady supply is ensured by a large fleet of own truck mixers, concrete pumps, bulk trucks and gravel vehicles.

Truck-mounted concrete pumps are the workhorses of the construction industry. They allow the concrete that has been delivered to the building site to be pumped quickly, reliably and economically to the very spot where it is needed. Truck-mounted concrete pumps are high-tech machines. To ensure safe and economical operations, manufacturers fit their machines with a wide variety of safety devices. Operators in turn view thorough basic and advanced training of their employees as vital. Contrary to this positive development, a series of serious industrial accidents has occurred in the turntable area of distribution booms. During maintenance work employees fell from the upper area of the vehicle, received serious injuries and some even lost their lives.



Fig. 1 Truck-mounted concrete pump, source: Wikimedia. When driving, the distribution booms are folded and rest on the loading area.

3.2. Aims

- Ensure safe maintenance and repair work in the turntable area of truck-mounted concrete pumps on site

3.3. What was done, and how?

Truck-mounted concrete pumps are fitted with a wide variety of safety devices. However, in the turntable area of distribution booms, when carrying out maintenance and repair work, accidents have occurred. After falling down from the upper level, workers have been crushed by the vehicle body, suffered serious injuries, and some have even died.

When one of these accidents occurred in a nearby company, this problem was systematically analysed at Rudolf Peter GmbH & Co. KG. The safety engineer, the safety professional and the manager of the metal workshop, who is also responsible for the maintenance work, discussed the causes of the accident with the representative of the accident insurance association. Possible solutions were proposed. However, several constraints had to be tackled e.g.:

- the statutory provisions from the traffic regulations had to be met, e.g. certain measurements could not be exceeded,
- the proper functioning of the concrete pump had to be guaranteed, intense discussions with the manufacturer were necessary, and
- the easy installation by the operator / maintenance worker was regarded as being of overall importance, as a complicated design might lead to neglecting the application in daily practice.

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After several discussions, trials and errors, the company managed to design a foldable railing, which met the afore-mentioned conditions and ensured safe working on the turntable area of the truck-mounted concrete pumps on site.

3.4. *What was achieved?*

The developed solution involves a safety device in form of a foldable railing (see photos below), that can be installed quickly when required and offers a high degree of protection against falling. The solution is simple but effective and does not cost much. At the same time, the development of this solution provided a significant impetus for manufacturers to also address this topic and offer effective anti-fall systems in the turntable area of truck-mounted concrete pumps as standard equipment.

The developed solution:

- prevents serious and fatal injury through falling during maintenance work,
- thus prevents human suffering, stoppages and disruptions to productivity,
- avoids treatment, rehabilitation and pension costs,
- improved productivity in an economic environment with high temporal density

The example shows that, at minimal expense, a highly effective contribution can be made to improve safety during maintenance and repair operations thereby avoiding industrial accidents.



CASE STUDIES



Fig. 2-4 Demonstration of the developed anti-fall system; source: peterbeton

The national jury for the Good Practice Award in Germany commended the case, saying that “In the past, a series of serious industrial accidents, some of them fatal, had occurred in the field of use of this good practical solution. Intensive efforts were made with all competent agencies and appropriate company employees to find a solution. The corresponding legal requirements were satisfied. The fold-out handrail can easily be installed in situ each time. Falls are prevented by using this practical solution. Other operators can re-use the solution at little expense. In particular, manufacturers of truck-mounted concrete pumps are now called on to offer this effective anti-fall system.”



In early 2011 the accident insurance association confirmed that no more accidents of this type were experienced in the company.

3.5. Success factors

The largest success factor was the detailed analysis of the accidents and the related safety shortcomings.

3.6. Further information

BG Rohstoffe und chemische Industrie, BG RCI; the BG German social accident insurance institution for the raw materials and chemical industry.

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3.7. Transferability

The technical solution is easy to implement at low cost on all similar types of truck-mounted concrete pumps.

4. References, resources:

Berufsgenossenschaft Rohstoffe und chemische Industrie (BG RCI), Das Praxishandbuch Baustoffe. Steine. Erden. D 2.1 Autobetonpumpen. Available under (31 August 2011): http://www.praxishandbuch-bg.de/daten/praxishandbuch/d2/d2_1.htm