



To see and to be seen - practical Test „View from Excavator“
Working safely in the Danger Zone of Excavators



Practical Test „View from Excavator“

Business Profile:

The STREICHER Group is characterised by technologies and services in four business sectors: pipelines and plants, mechanical engineering, civil and structural engineering, raw and construction material.

The individual corporate divisions are specialised in their business fields. 3,500 employees work with expertise and distinctive customer orientation. The divisions work hand in hand and guarantee a smooth execution of the projects. A tight organisational structure and high reliability in the carrying out of projects result in a cost effective calculation and execution of the projects.

The success of the Group is based on a foundation from many years of experience, a consequent quality management and solid capital resources as well as motivated employees. The companies of the STREICHER Group work on a high technological level. The basis for this is regular investments in machinery as well as the qualification of their employees.

Innovation and investments result in a continuous extension of the company's activities and guarantee the long-term performance of the STREICHER Group.

The STREICHER Group possesses extensive expertise and many years of experience. Due to the bundling of specialised business units the group is able to carry out major projects as a complete package.

Finding: Inattentive behaviour in the danger zone around excavators

In early 2017 our excavator operators repeatedly complained about inattentive behaviour of co-workers in the danger zone of the excavator.

It happened again and again that employees entered the danger zone without having first contacted the excavator operator which led to near-miss incidents in several situations.

In addition, construction equipment was left behind in the danger zone (impending material damage).

The excavator operators' wish: Raising the employees' awareness of the dangers in the area around the excavator!



source: BG Bau

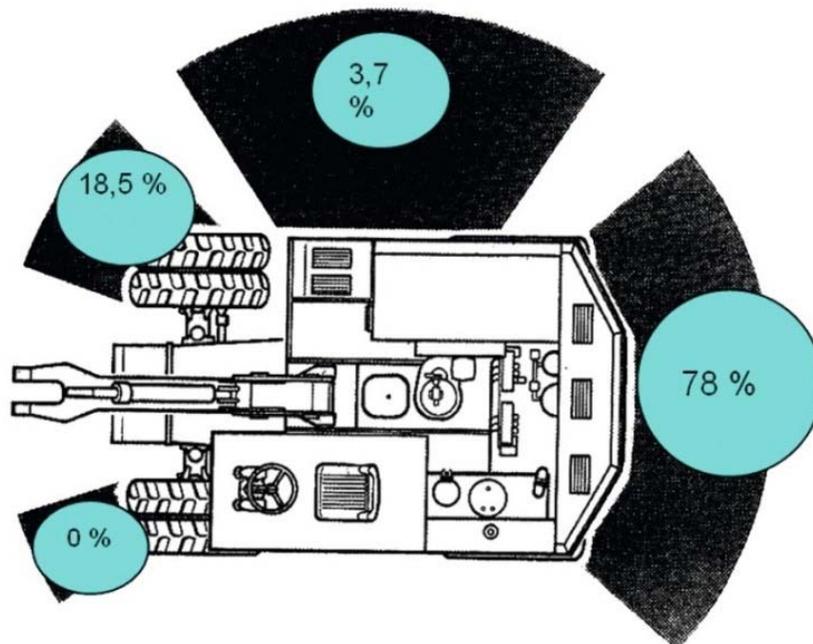
Practical Test „View from Excavator“

The danger zone is the area around the excavator in which persons can be reached through the movement of the machine, its parts and load. Being in this zone can lead to injuries.

Dangers are always present at a construction site but can be reduced to a minimum by considering total personnel safety. Especially useful and important for this is the direct contact among all persons involved.

Particularly the clear intervisibility between the excavator operator and the person who is in the danger zone is crucial.

The excavator operator and the banksman previously have to agree on definite hand signals for different situations. Should an additional supporting banksman become necessary in the course of the project, this person has to be informed about the hand signals as well.



Unfortunately, also fatal accidents happened in the danger zone of excavators again and again during the past few years in the pipeline/ construction industry.

Pict.: Accident frequency in the different surrounding areas of excavators 1996-2000 (only severe and fatal accidents)

source: BG Bau

Practical Test „View from Excavator“

1. Initial impulse: Excavator operators' reports about inattentive behaviour in the danger zone of the excavator!
The excavator operators' wish: Raising the employees' awareness of the dangers in the area around the excavator!
2. Site managers reported this observation to the HSE-Q department → The managing director was informed.
3. **Solution: The managing director discussed the problem together with the project managers and the HSE expert and searched for a solution** that leads to a quick and enduring improvement of safety behaviour. Previous similar situations have shown that **practical experience is the better way, compared to conveying theoretical knowledge** → **Our managing director decided to start the campaign „Practical Test „View from Excavator“ directly at the construction sites!**



The **managing director** discussed the problem together with the project managers and the HSE expert and **decided to start the campaign „Practical Test „View from Excavator“** at the construction sites!

Practical Test „View from Excavator“

Although the visibility conditions with earthwork machines were improved by better-arranged constructions over the last years, there remain so-called „**blind angles**“ with each machine. These areas cannot be seen from the operator`s seat.

Implementation: Besides the relevant safety instructions, STREICHER use a **practical action** which **enables our employees to understand through their own experience why they become invisible to the operator when they are positioned in certain places.**

This dangerous situation was simulated by using an excavator and diverse auxiliary means. The employees sat on the seat of the excavator operator and thus were able to test if the dummies (white helmets on poles) are visible from their seat. They quickly found that none of the dummies could be seen from the operator`s seat and therefore persons who stand there cannot be noticed by the operator.

The purpose was to show the employees that the operator`s field of vision is very restricted and that the presence of persons in the danger zone can easily lead to incidents and accidents. Since 2017 STREICHER carry out this campaign within the framework of safety days at the construction sites.



Border of danger zone is marked by pylons.

Positions of the „blind angles“ are represented by four dummies (helmets on poles).



Practical Test „View from Excavator“

The dummies cannot be seen by the excavator operator!



**Role reversal:
Employees sit on the operator's
seat for once and test the field of
vision themselves!**

This dangerous situation is internalised through **own experience** and the employees are more aware of the hazard. **Therefore, they act more safety-conscious in the future when they work in the danger zone of excavators.**





Practical Test „View from Excavator“

Example of the campaign:

Within the framework of the practical test with the excavator our employees had the possibility to ask our safety experts questions about work safety and received detailed and practical information, especially regarding safety-conscious behaviour during excavator works.

In order to test the knowledge received, our HSE department beforehand prepared a **competition**. The employees filled in a **multiple choice questionnaire on the topic of „safety around and in an excavator“** .

By submitting their questionnaires the participants were able to win diverse items from STREICHER's advertising material. Many colleagues followed this incentive: 141 questionnaires were submitted and evaluated. In total, approx. 250 employees participated in this practical test „View from Excavator“.





Practical Test „View from Excavator“

By means of **posters** on display employees were invited to participate in the multiple choice test on the topic of „safety around and in the excavator“

The employees filled in a **multiple choice questionnaire** in order to test and deepen the received safety knowledge.

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Die ersten 150 Personen erhalten einen Preis.
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Fragebogen

Datum:	Firma:	Name:

- Wie verlässt man einen Bagger richtig?
 - Keine Zeit verschwenden und abspringen
 - Man benutzt die Absteighilfe bestimmungsgemäß
- Was kann bei dem Sprung aus dieser Höhe (40 cm) passieren?
 - Nichts, immer schon so gemacht
 - Verletzung und damit verbundene Arbeitsunfälle
 - Arbeitsunfähigkeit
- Was für eine Kraft wirkt auf den Körper bei einer Sprunghöhe von?
 - 40 cm → 2,0-fache bis 3,5-fache des Körpergewichts
 - 60 cm → 0,75-fache bis 1,5-fache des Körpergewichts
- Ist Personenbeförderung mit einem Bagger erlaubt?
 - Ja, ist ja ein Fahrzeug
 - Nein, die Beförderung und der Transport von Personen ist verboten
- Welcher Sicherheitsabstand ist bei Böschungen und Gräben einzuhalten?
 - Bis 12,0 t Gesamtgewicht ≥ 1,00 m und über 12,0 t bis 40 t Gesamtgewicht ≥ 2,00 m
 - Es ist kein Sicherheitsabstand erforderlich
 - Über 12,0 t Gesamtgewicht < 1,00 m
- Kreuzen Sie die richtigen Aussagen an.
 - Das Arbeiten in der Nähe von Baggern erfordert das Tragen von Warnkleidung
 - Der Aufenthalt im Gefahrenbereich ist erlaubt
 - Der Maschinenführer muss mind. 18 Jahre alt sein
- Welcher Sicherheitsabstand ist mind. notwendig um Quetschungen zu vermeiden?
 - Mind. 0,50 m zwischen sich bewegenden Teilen des Baggers und festen Teilen der Umgebung
 - Mind. 0,1 m, da kaum Quetschgefahr besteht
- Wie reagiert man, wenn sich Personen im Gefahrenbereich aufhalten?
 - Man reagiert gar nicht und geht seiner Tätigkeit nach
 - Arbeit sofort stoppen und Personen warnen lassen
 - Man reagiert, arbeitet aber ungestört weiter
- Wie oft muss eine Unterweisung erfolgen?
 - Einmal und nie wieder
 - In regelmäßigen Abständen und bei besonderen Ereignissen
- In welchem Bereich passieren 80% der schweren Unfälle? (Zutreffendes ankreuzen)



Practical Test „View from Excavator“

Results:

Following the practical tests „View from Excavator“ it became apparent that the practical experience made during the test

- had a lasting positive effect on the safety behaviour of the employees,
- resulted in a proactive awareness of the excavator's danger zone.

→ Consequently, damage to persons and material is avoided.

Positive statements made by the excavator operators, a few months after the practical test „View from Excavator“ was carried out:

„Since the practical test with the excavator the employees behave more attentively in the danger zone around the excavator.

We [the excavator operators] can now work with more calmness and with less interruptions. “

„Since the practical test there have been hardly any near miss incidents. “

„The employees now communicate correctly with me [the excavator operator].“

„I see that the employees now often correct each other, if someone does not follow the safety rules and they repeatedly talk about the „blind angles“.





Practical Test „View from Excavator“

Conclusion:

**Practical experience
is better than
reading texts of instructions or
listening to safety instructions!**

**Written procedures = short-term effect
Practical exercises = long-term effect!**

Long-term planning: Similar practical exercises in order to improve the safety culture are planned for the future.





Practical Test „View from Excavator“

1. Does the initiative add value?
Especially routine work situations, like working in and around an excavator, often lead to reduced attentiveness and careless behaviour. **The practical test „View from Excavator“ presents the employees with the opportunity to experience this routine situation for once from the other side, the side of the excavator operator.** Practical experience affects the safety awareness of each participant for a long time and results in distinct improvement in behaviour and in a reduction of incidents/accidents.
2. Does the initiative show management commitment?
Our employees' health has top priority for our management. In order to prevent incidents and accidents happening in the danger zone of the excavator, **the managing director immediately defined and ordered the practical test „View from Excavator“ to be done as an appropriate measure** and he also authorised the necessary funds and resources.
3. Does the initiative constitute an identifiable step forward in safety for the Industry?
Practical experience stays longer in the mind than only reading written procedures. By taking the position of the excavator operator for once, the employees tested the field of view themselves and found that the „blind angles“ are not visible.
4. How efficient is the initiative?
The immediate feedback given by the employees after they tested the view from the excavator operator's seat showed that they were very surprised about the results and that this experience strongly affected them. **The observations made by the excavator operators during the time after the campaign was done confirmed that the practical test has greatly improved the safety behaviour, hardly any near-miss incidents happened and also no damage to material.**
5. Does the initiative have additional benefits?
The distinct success of the initiative has prompted us to review work processes regarding certain safety aspects. **Their active involvement made our employees feel more valued and the importance of their work and their health was emphasised which increased motivation and work satisfaction.**
The initiative showed that practical experience is more effective than reading written safety instructions and risk assessments – similar actions for increasing the work safety and safety culture are planned for the future.

