



## Paywelder with Protective Platform and Remote Control for Use in the Pipeline Industry

2022 IPLOCA Health & Safety Award



## About STREICHER

The STREICHER Group has different locations, subsidiaries and holding companies in Germany and abroad. The companies within the group are specialised in different services; therefore they can act efficiently and cost-oriented on the market. Together they are able to offer a wide range of technical services. This enables them to plan and execute major projects as a complete package.

4,000 employees work with expertise and distinctive customer orientation. 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.



Fatal accident on May 27th, 2020 in Vernole, Italy:

An employee got **caught in a paywelder track** causing a severed leg. The accident led to the death of the worker. Involved machine: Paywelder Mooroka MST1500-V

Colleagues found the employee crouched on the moving paywelder's right track, with the body positioned within the space between the machine engine and the platform holding the propane cylinders. He was positioned towards the cylinders keeping himself with his left hand.

The severed leg was found about 2 m from the back of the track. **It was cut off by the moving track because it got jammed.**

The causes of this fatal accident were:

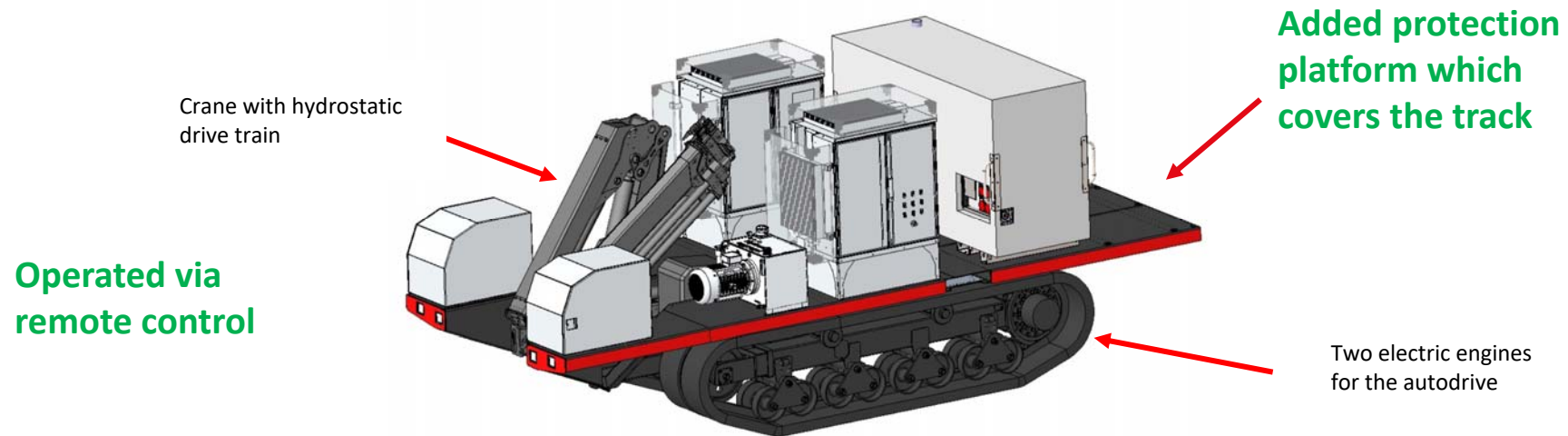
- Unsafe behaviour of the employee that died
- Lack of coordination between two operators.  
**It is not possible for the driver of the machine to notice such unsafe actions taking place at this particular spot of the paywelder** (see photo at the right showing a later simulation of the employee's position at the time of the accident).
- **The moving track has no covering element for protection.**





## Main Aim:

To develop a paywelder that provides absolute safety against the cause of this fatal kind of accident (body parts get caught in the moving track).



**Improved paywelder,  
developed and manufactured by STREICHER**



# Solution

There are many incidents and accidents involving paywelders in the industry which lead to severe damage to persons and also equipment.

That is why a team of experts was formed including staff from STREICHER's specialized departments (machine department, engineering department, pipeline department) and the top management with the goal to develop an improved paywelder.

The STREICHER top management were in ongoing exchange with their experts and formed an active part of the development team.

The **technical requirements** regarding the new paywelder set by this team were:

- **Safety**
- **Environment-friendly (less CO<sub>2</sub> emissions, less soil pressure)**
- **Energy-saving**
- **Cost-efficient**



# Implementation

1<sup>st</sup> step:

In order to achieve a reduction of fuel consumption an additional aggregate was fixed on the paywelder which is supposed to feed the welding process.

→ In use since 2014 in pipeline projects

Newly developed paywelder because of the accident:

Adding a **protective platform that covers the track** plus an **on-board electric power train** with remote control.

→ In use since end of 2020 in pipeline projects

The whole initiative was **completely funded by STREICHER.**





# Achievements

The new paywelder is **safe** !

- ➔ **Added on-board electric power train is operated via remote control.** When the paywelder is moving, the machine operator walks alongside it, which means he has a **much better and flexible view** and therefore he **can react earlier and faster** in case of unexpected occurrences.
- ➔ **A new protective platform that covers the tracks does not allow for jamming** between track and other components of the machine. **If this protection part had been in place on the day of the accident, the accident would not have happened.**



Safe !



# Achievements

The new paywelder is **environment-friendly** and provides **advantages for the health of the staff** working in the area of the machine !

➔ **Noise reduction** by using a **low-vibration and silenced electric power train**.

➔ In order to achieve a reduction of fuel consumption an **additional aggregate** was fixed on the paywelder which is supposed to feed the welding process. Power output of the aggregate can be adjusted to the energy consumption needed by the welding machine.

**On-board electric power train** was added:

➔ **Reduces diesel consumption by 50 % and therefore also the pollutant emissions by 50 %!**

➔ **Saves about half of the original fuel costs!**

➔ **Use in water protection areas possible without any negative effects on the environment.**

➔ **Saving of oils which leads to a minimization of possible dangers to the environment.**

➔ **Weight reduction** from originally 21 tons to 16.3 tons total weight.

➔ **Increased protection of topsoil** because of lower pressure!

Advantages

➔ Health +  
Environment +  
Energy Consumption







# Achievements

The new paywelder is **cost-efficient** and **multi-functional** !

- ➔ Instead of two operators, **now only one person from the welding team is necessary** to operate the new paywelder – made possible by remote control.  
This **saves costs** as the driver who could not do anything during the welding phase and was just waiting for the welding to be over without being productive, is now not needed anymore at all.
- ➔ Apart from welding works, due to the modular, multi-functional design, it can be used as a **dump truck** or for the **transport** of pipes an/or material.
- ➔ The new paywelder can be driven on **uneven/rough terrain and also on streets** because the tracks are made out of rubber and therefore suitable for asphalt as well.

Cost-efficient +  
Multi-functional !



# New and previous Paywelder

New improved  
paywelder



Previous paywelder





# Improved Paywelder

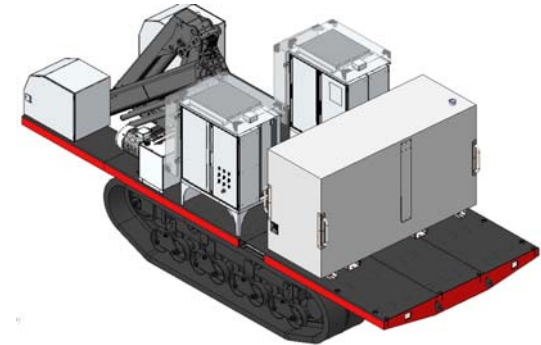
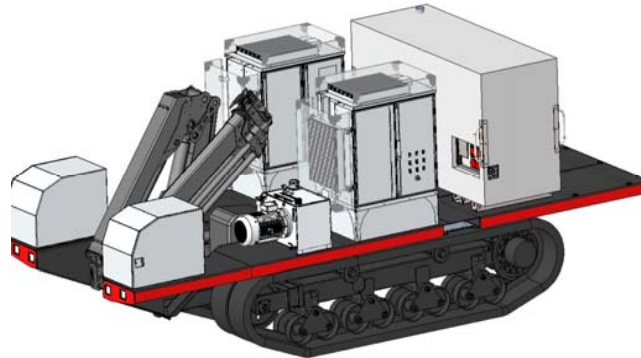
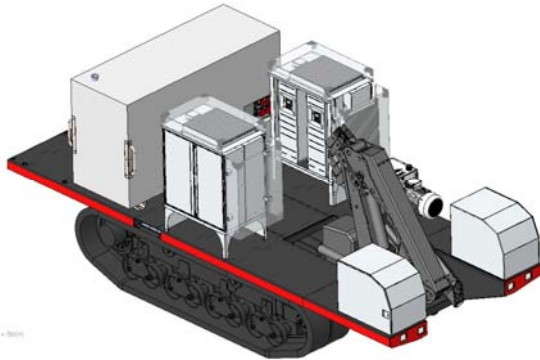
Use of the new paywelders in STREICHER's pipeline projects







# Improved Paywelder



Positive feedback was received by the pipeline crew who worked on the projects for which the improved paywelder was used.

Operator :

- „Safer to operate with the remote control, can spot any unusual actions around the machine more easily. Good feeling.“

Team who work in the area nearby the running paywelder:

- „Much better working conditions – machine makes less noise.“







# Improved Paywelder

- **Why does it add value?**

The added on-board electric power train is operated via **remote control**.

When the paywelder is moving, the machine operator walks alongside it, which means he has a much **better and flexible view** and therefore he can **react earlier and faster in case of unexpected occurrences**.

A new **protective platform** that covers the tracks **does not allow for jamming** between track and other components of the machine. If this protection part had been in place on the day of the accident, the **accident would not have happened**.

- **Why does it show management commitment?**

The top management **participated in the team** of experts that was formed including staff from STREICHER's specialized departments (machine department, engineering department, pipeline department) in order to develop an improved paywelder.

The STREICHER top management were in ongoing exchange with their experts and formed an **active part** of the development team.

The whole initiative for developing the new paywelder was **fully funded by STREICHER**. The top management decided to provide the **necessary funds and resources**.





# Improved Paywelder

- **Why does it constitute a step forward for Health & Safety in the industry?**

There are many incidents and accidents involving paywelders in the industry which lead to severe damage to persons and also equipment, even to fatal accidents. By adding the **protective platform** to prevent jamming of body parts a **significant improvement** has been made. Furthermore, by making it possible to operate the machine via **remote control**, another **positive step towards safety** was made as the operator has a **much better view** of the machine and **can act in a quick and flexible way** in case of unexpected occurrences.

- **How efficient is it?**

It is a fact that the fatal accident that happened in Italy where an employee got caught in a paywelder track causing a severed leg **could not have happened with the newly developed and improved paywelder**. Therefore, we can now be 100 % sure that this type of accident is **now prevented** by using the new paywelder. Also, the operator of the machine has a **much better view** now with the remote controlling and is not bound to the limited view from the driver's seat that was possible when using the previous paywelder.

This major improvement is combined with other advantages, such as **decreased need for resources**, e. g. time, money, people.



# Improved Paywelder

- **Does it have additional benefits?**

There are many additional benefits:

**Health**: noise reduction

**Environment**: reduction of fuel consumption by 50 %, reduction of pollutant emissions by 50 %, use in water protection areas possible without any negative effects on the environment, increased protection of topsoil because of lower pressure (weight reduction).

**Cost-efficient**: saves about half of the original fuel costs, saving of oil consumption, only one operator necessary instead of two

**Multi-functional**: Besides for welding works the paywelder can also be used as a dump truck or for the transport of pipes/material. Can be driven on uneven/rough terrain but also on asphalt streets.