

ph-cleantec

## Cleaning Tanks and Tracked Vehicles is Key Technology Matters

When cleaning tanks and tracked vehicles, several aspects need to be taken into consideration: hull, turret, engine parts, as well as the engine compartment and gearbox (installed or removed) impress not only with their technical complexity, but also with their sheer size and weight. This makes it more important to be able to easily reach these parts and, ideally, clean them without having to remove the parts. Findings from a product presentation by ph-cleantec GmbH at the premises of the HIL GmbH (Heeresinstandsetzungslogistik) Army Repair Logistics near Hardheim (State of Baden-Württemberg) provide valuable/useful answers.

Previously, military vehicles (tanks, trucks) were cleaned with high-pressure cleaners. These are still useful for exterior surfaces covered in mud, but cannot be described as efficient in terms of working time and quality of the cleaning results when it comes to cleaning motor, gearbox, or moving parts in general. Also, the use of those cleaners is neither healthy nor resource-friendly. Equally, cold wash tables are no longer accepted and are being replaced because of the health impact they pose due to the chemicals required and the aerosols produced. A new technology is found in the **low-pressure hot cleaning process**. With this process, tanks and tracked vehicles can be cleaned easily, efficiently and in a resource-saving manner. Thanks to the low pressure of 7.5 or 14 bar, even sensitive parts are not damaged, but the dirt is rinsed off and transported away. Thanks to the high cleaning temperature of up to 95°C (203 Fahrenheit), dirt and especially oils and fats are cleaned quickly and efficiently.

At the same time, this methodology is both health-friendly and environmentally friendly because it largely avoids the use of chemical additives, and working with low pressure is much faster and more pleasant than scrubbing by hand or working with high pressure or strong chemicals. If necessary, an alkaline cleaner can be added (then a low concentration of 1-3% is acceptable/sufficient), and the medium can be used multiple times because the cleaning devices can recycle the cleaning medium used. In practice, it is also important that some critical parts, in particular the engine compartment, can be cleaned easily and without creating a "flood" inside the compartment due to the particularly low water consumption of only 1.8 or 2.8 liters per minute – compared to 30 liters plus with high-pressure cleaners.

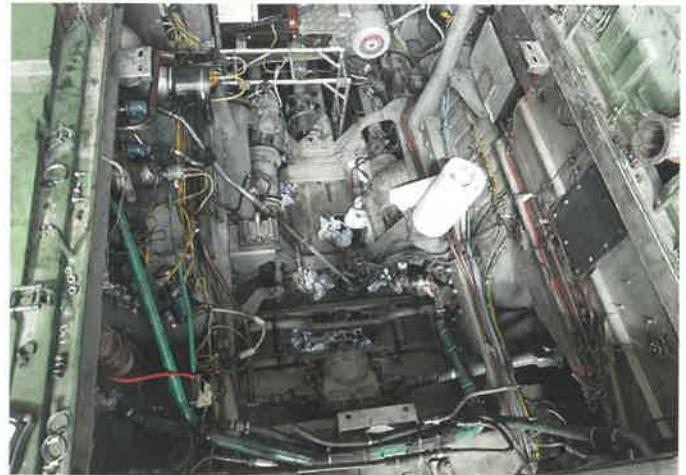
This method is also extremely cost-effective, as cleaning is done many times faster than by hand – and users regularly save 80-90% of their working time.

### Product Presentation at the HIL Cleaning Day

As part of the HIL Cleaning Day held on 20 October 2022 in Hardheim, removed transmission and engine blocks from LEOPARD 2 Main Battle Tanks (MBTs), engine troughs and various individual parts of a LEOPARD 2 were cleaned.



◁ The highly mobile SRE device is perfect for cleaning tanks and tracked vehicles and – in combination with a separate collector – for the cleaning of large and heavily contaminated parts. Pictured is a 1000 SRE (7.5 bar).



△ Engine compartment of a LEOPARD MBT during cleaning

What was cleaned? The transmission and engine blocks, including radiators, were covered with thin layers of dried dust and mud partially mixed with oily residues. Parts of the engines, especially the exhaust ducts, were contaminated with thick layers of soot and traces of residual exhaust gases. Parts of the transmission area were also covered with thick layers of grease and oil. The walls and floor of the engine compartment/trough, as well as the drive wheels with their sliding sleeves were coated with a mixture of fats and oils and sometimes copper paste. Also, some parts covered in special preservation waxes had to be cleaned.

What was used in the cleaning process? The cleaning devices available were a 1000 SRE with 7.5 bar (without parts cleaning level) and a 1500 SR-DP with 14 bar (with parts cleaning level). Both cleaning devices worked with low pressure – 7.5 or 14 bar – and high temperatures of up to 95° Celsius. Cleaning was carried out with tap water or tap water with around 2-3% of the alkaline B 1200 cleaning accelerator provided by ph-cleantec.

What was the result? When using the 1000 SRE with 7.5 bar and tap water, the tank gearbox and engine could be cleaned effectively. However, the cleaning work was carried out significantly faster and with significantly better results using the 1500 SR-DP. The higher pressure meant that even stubborn dirt could be removed much better and faster. The results were especially impressive when the B 1200 cleaning agent was added: Even the most difficult fats and oils could be removed quickly and efficiently. Using the 1500 SR-DP without the alkaline cleaning agent, several steps/passes were required to clean the particularly challenging drive wheels. With the alkaline cleaning agent B 1200, however, the drive wheels were clean with just a single wash. This also applied to the walls of the tank hulls and the heavily sooty exhaust ducts and exhaust sleeves.

In summary, it can be said that compared to other methods, in particular brake cleaners, dry ice and high pressure also tested at the HIL Cleaning Day, hot cleaning was the most efficient way to clean tanks and tracked vehicles. At the same time, it is an extremely environmentally friendly process, as hardly any resources are used and no VOCs (volatile organic compounds) are released. Ultimately, the devices are extremely safe to work and protect the health of the users, as little or no chemicals are used – at most the B 1200 that is not a dangerous good and harmless to health and environment.



◁ Tank engine removed: side and front view.

