

# CLEAN

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Large collector for parts cleaning

## Environmentally friendly, safe, and clean

Low pressure, high temperatures - that is the secret behind ph-cleantec's devices. With water at 95° Celsius, greasy and oily residues can be dissolved without chemicals. Less pressure also means less abrasion that is thrown around and less danger for the cleaning staff, who no longer need protective clothing. As a side effect, you save 90 percent water.

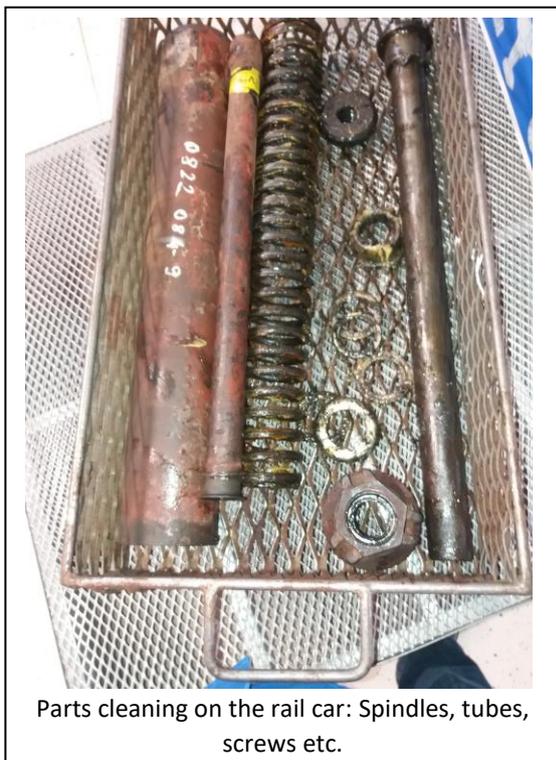
The requirements for cleaning in railway operations are diverse and often challenging. ph-cleantec offers an optimal and environmentally friendly solution for cleaning surfaces that are heavily contaminated with oils and greases, such as track setting systems, track lubrication systems and turntables in the outdoor area, but also axles, ball bearings, couplings, motors, heat exchangers, springs, etc.. As a rule, very little chemistry is used and the method is therefore not only efficient and cost-saving, but also particularly environmentally and health-friendly.

### Applications

In contrast to the high-pressure cleaner (HPC), ph-cleantec works with a low pressure of up to 14 bar, but with high temperatures of up to 95° Celsius. This makes the method

particularly efficient for oily and greasy surfaces as also heavy dirt can easily be removed primarily by the hot temperature. Thanks to the low pressure the cleaned contaminants are not carried through the entire factory building. While the HPC is suitable for large surfaces such as the outer walls of wagons, tank wagons, locomotives and the like, the strengths of the low-pressure hot cleaners lie in the cleaning of smaller parts and complex or delicate surfaces.

A good example are spindles and springs from the engines or on the axles, which can be cleaned effortlessly with the hot cleaning method. For this purpose the units have collector trays on top - the so-called parts cleaning level - in which smaller elements are simply sprayed off and cleaned with a spray gun and nozzle. Like this, even heavily soiled parts can be easily cleaned in these collectors.



An ideal application is the cleaning of air-conditioning heat exchangers, which are usually installed under the wagons and which would be damaged by cleaning with high-pressure cleaners. These can often be cleaned directly on the wagon, as the hot cleaning devices are mobile and, thanks to a capacity of almost 100 litres of water, largely autonomous so that they can be brought directly to the wagon. With the help of push and pull lances and various nozzles, work can then be done directly on and even under the wagon.

If the heat exchangers have to be removed, or if large parts have to be cleaned, there are also independent large collectors as an alternative to the top-mounted parts cleaning collectors. These are usually the size of a Euro pallet but can be up to 10m<sup>2</sup> in size and hold up to 10t in weight. Large parts such as entire axles, couplings, gearboxes, etc. can be lowered into them by crane and then cleaned. For example, couplings are cleaned with ph-cleantec equipment at the Metro in Paris.

In practice, lubrication systems and the moving parts on actuators and turntables in outdoor areas can also be cleaned perfectly with the devices from ph-cleantec. The hot cleaning devices are also tried and tested and efficient for the tiresome topic of WC cleaning.

Finally, the devices are also ideal for some special applications, such as cogwheel railways and cable cars, as well as escalators, which are often part of the operation of suburban and underground railways.

### **Operating Principle**

The principle of operation of the ph-cleantec units is based on cleaning at high temperatures: Normally, 95°C is used, i.e. just below the boiling point of water. HP cleaners, on the other hand, primarily clean with pressure, i.e. with mechanical action. In the case of greasy or oily contamination, however, pressure is often not really efficient - although coarse dirt is removed, thorough cleaning of such parts with a high-pressure cleaner or even with

chemical solutions would often take considerably longer and not achieve the same cleaning quality as with a hot cleaner.



Another great advantage of low-pressure cleaning is that dirt remains in the unit resp. in the collector - there are no significant splash-back effects, dirt is neither carried through the factory floor by high pressure nor by solvents such as A-I cleaners. The employees do no longer stand in a cloud of droplets, and the protective clothing usually required for HP cleaners can be dispensed with. This makes cleaning much more comfortable and less cumbersome.

This is further promoted by the mobility of the units, which can easily be brought to the part which needs to be cleaned. In many cases, this also eliminates the need for prior dismantling of the respective part.

### **A clear benefit for employer and employees, for environmental protection and for occupational safety**

At the same time, the ph-cleantec devices work in a particularly resource-saving and thus environmentally friendly way. This starts with the fact that the cleaning of greasy and oily parts is often much faster with high temperatures than with high pressure - this in itself saves working time and resources.

In addition, ph-cleantec units require only a fraction of the water of a high-pressure cleaner: While a high-pressure cleaner has a throughput of 20-30 litres per minute, the ph-

cleantec units require just 1.8 litres or 2.8 litres per minute, i.e. one tenth. This is further reduced by the fact that the water in the low-pressure units can be collected in the tank and recycled several times. As a result, only one tenth of the added chemicals are needed, and these can be used several times together with the water. In this way, the employer not only saves expensive working time and resources, but also makes a considerable contribution to environmental protection by saving up to 90% or more of water and chemicals.

As a most agreeable side effect, working with low pressure is also beneficial from the perspective of occupational safety: Risks of injury are practically eliminated because there is no risk of parts being catapulted at high pressure. In addition, the devices are highly beneficial to health because there is no need to work in a cloud of droplet which may even contain harmful chemical substances, so there is no risk of inhaling or coming into contact with harmful chemicals.

All in all, a clear win-win for employers, employees, environmental protection and occupational safety!