

ABSTRACT

The Centre for Best Available Techniques (BAT) is founded by the Flemish Government, and is hosted by Vito. The BAT centre collects, evaluates and distributes information on environment friendly techniques. Moreover, it advises the Flemish authorities on how to translate this information into its environmental policy. Central in this translation is the concept “BAT” (Best Available Techniques). BAT corresponds to the techniques with the best environmental performance that can be introduced at a reasonable cost.

The aim of this report is to determine the BAT for car- en truckwash companies. Based on the BAT selection, recommendations are formulated with respect to the environmental permit regulation.

The number of carwash installations in Flanders is estimated at more than 1000, the number of truckwash installations at approximately 80. Based on the washing concept, a distinction can be made between rollovers (+/- 50%), tunnel carwashes (+/- 25%), and self-carwashes (+/- 25%). Truckwash installations are almost exclusively rollovers. There are also companies who wash trucks or vans at the customer's site (so-called mobile truckwash).

The environmental impact of the sector mainly relates to water. The gross amount of water used per washed vehicle is 100-350 l in a rollover, 200 to 650 l in a tunnel carwash, and 70-80 l in a self-carwash. 350 to 900 l are used per washed vehicle in a truckwash installation. This study pays much attention to the possibilities of reducing the water consumption.

A significant reduction of water consumption can be realised by re-using or re-cycling the washing water.

- In the case of “re-use”, the washing water is re-used in a low-quality application, e.g. for cleaning of wheel rims or car bottoms. Re-use requires a rather simple “pre-treatment” of the washing water (removal of precipitating or floating parts)
- In the case of “re-cycling”, the washing water is re-used in a high-quality application, specifically in the main washing process. Re-cycling requires a further “regeneration” of the pre-treated washing water. Regeneration systems based on biological water treatment seem the most appropriate for a normal carwash installation. Physicochemical regeneration techniques are more appropriate for heavier contaminated washing waters, such as those from plants for deconservation of new cars. Systems based on ozonisation may be interesting for weakly contaminated waste waters containing little detergent, such as those from bus wash installations. The regeneration techniques may be supplemented by additional filtration steps, and techniques for odour control or disinfection. Disinfection of carwash water is however not common in Flanders.

The different techniques that allow re-use and re-cycling, are described in detail in the technical sheets in the annexes.

The feasibility of re-using/re-cycling water and the BAT-evaluation depend on the type of installation (self-carwash, rollover and tunnel carwash), as is shown in the table below. The table also gives the achievable consumption levels of fresh water. These levels may be used as

guidance value by the authorities to set standards for the maximum allowed water consumption.

BAT-evaluation water re-use/re-cycling in carwash installations

		Self-carwash	Automatic carwash-installation with a gross water consumption < 5000 m ³ /j ⁶	Automatic carwash-installation with a gross water consumption > 5000 m ³ /j ⁷
“Re-use”	Technically feasible	limited	yes	yes
	Water savings	limited	medium	medium
	Economically feasible	no	yes	yes
	BAT	no	yes	no ⁸
“Re-cycling”	Technically feasible	limited	yes, except for the final rinsing	yes, except for the final rinsing
	Water savings	limited	large	large
	Economically feasible	no ⁹	no	yes
	BAT	no ⁹	no	yes
Water re-use/re-cycling rate associated with the BAT		0%	10-15%	80-90%
Fresh water consumption associated with the BAT (l/washed vehicle)		60-80	170-315	40-80

For truckwash installations with a gross water consumption > 5000 m³/j, re-cycling is considered BAT. The fresh water consumption associated with the BAT is more difficult to determine, because it depends heavily on the size of the washed vehicles and the type of installation. A water re-cycling rate of at least 70% is considered to be generally achievable.

⁶ This includes almost exclusively rollovers.

⁷ This includes almost all tunnel carwashes, and possibly some heavily used rollovers.

⁸ Except when combined with “re-cycling” (“re-use” on itself yields relatively small water savings compared to “recycling” and is therefore not BAT)

⁹ except when the self-carwash is combined with an automatic carwash installation with water recycling, so that the same water regeneration system can be used.

In order to achieve further savings on tap- or groundwater, the following measures are also considered as BAT under certain conditions:

- use of rainwater for rinsing or washing;
- use of the residual water from the reversed osmosis installation for washing;
- water savings in the washing cycle itself (= reduction of the gross water consumption).

In addition to the BAT's relating to water saving and –re-use/re-cycling, BAT are also selected in the fields of energy, noise and good housekeeping. A specific BAT is proposed for mobile truck cleaning.

- The potential for *energy savings* in carwash installations depends largely on the type of installation (self-carwash, rollover or tunnel carwash). In self-carwashes, energy is mainly used for the production of warm water. Washing with cold water is not BAT for self-carwashes, because this yields insufficient washing quality. In rollovers and tunnel carwashes, washing with cold water is possible, and considered BAT. In these installations, the main energy use is for drying the washed vehicles. The use of efficiently orientated blowing systems is considered BAT. In addition, attention should be paid to the energy efficiency of the equipment used in the smaller energy consuming processes.
- In order to limit *noise* nuisance for the neighbourhood as much as possible, different noise abatement techniques are considered BAT. For tunnel carwashes and rollovers, closing the installation by means of a gate is an important measure. Furthermore, acoustic isolation and orientation choice require special attention. These measures are less feasible in self-carwashes. Other BAT, which are feasible for all types of carwashes are the choice for less noisy equipment (vacuum cleaners, carpet-beaters, ...), sensibilisation of the public (warning signs, noise measurement, ...) and a limitation of the opening hours (close installation at night).
- *Good housekeeping* measures are almost always considered BAT. They include the choice for environmentally friendly washing products and the employment of a detergent, water and energy bookkeeping.
- For *mobile truck cleaning*, the use of mobile washing floors is considered BAT when the washing is done at a location without washing floor. These mobile washing floors allow the washing water to be collected and treated by means of an oil separator before it is discharged.

BAT selection was brought about on the basis of, among other things, a literature survey, a technical and socio-economic study, cost calculations, foreign standards and ecolabelsystems, plant visits and discussions with industry experts, suppliers and specialists from (semi) public institutes. The formal consultation was organised by means of an advisory committee of which the composition is given in Annex 1.