

Date: April 2023

Sustainability in commercial dishwashing

Nowadays, the term sustainability includes ecological, economic and social considerations. Nevertheless, the market often pays the greatest attention to the economic component, i.e. the procurement of cleaning agents and dishwasher at the lowest possible cost. In the last 25 years, the consumption of water and, thus of cleaning products have already been significantly reduced as a result of sophisticated water-saving measures in the machine industry. Also, cleaning agents account for only about 5% of the total cost of commercial rinsing.

Does it make sense to lower the temperature to save energy?

Due to price increases, energy savings are now coming even more into focus. However, it must be borne in mind that lowering washing or rinsing temperatures can lead to considerable losses in cleaning quality and microbiological results if no products with disinfection components (primarily active chlorine) are used. Finally, the microbiological specifications of the relevant DIN standards should be observed in commercial dishwashing. The European standard EN 17735 for commercial dishwashing was published in February. This means that the same requirements for a hygienic dishwashing result in commercial dishwasher will then exist throughout Europe. With publication of the European standard EN 17735 Commercial dishwashing machines – Hygiene requirements and testing the same specifications for a hygienic washing result in commercial dishwashing now exist across Europe

The use of disinfectants to lower temperatures is in direct contrast to the demand of many customers for environmentally friendly cleaning products. The topic has become increasingly relevant in recent years. As a result, numerous eco-labels have established themselves on the market.

Eco-certificates help with orientation

The most relevant on the market are the EU Ecolabel and the Nordic Ecolabel (Nordic Swan). In addition, there are regional eco-certificates such as "die Umweltberatung" from Austria or "Ecocert France". However, there are also many labels on the market without official testing.

The EU Ecolabel is recognized in all EU member states (plus Norway, Liechtenstein, and Iceland). The 'EU flower' serves as a distinguishing mark. To obtain the EU Ecolabel, clear criteria must be met, e.g. concerning hazardous substance classification of the raw materials and the product itself. Furthermore, the preservatives the product contains, the biodegradability and the packaging are considered. There are also specific sections for commercial products. Thus, not only the ingredients checked concerning environmental aspects, but also the application properties depending on the product. In the case of a commercial dishwasher detergent, this is, for example, the cleaning performance, which must be comparable to or better than a conventional product on the market.

In contrast to many other labels, the EU Ecolabel has a binding registration procedure and an independent examination by a neutral testing body. In Germany, for example,

this is done by RAL ([RAL - Expert for Labels| RAL.DE](#)). Further information on the EU Ecolabel can also be found on the homepage of the EU Ecolabel: [The ecolabel you trust: EU Ecolabel](#). On the homepage, all listed products of the respective manufacturers can be found in tables. Many detergent manufacturers have established numerous products for manual and mechanical use in the commercial sector with the EU Ecolabel in their product range and thus provide an excellent alternative to conventionally used products in terms of environmental compatibility.

It should not be forgotten that products with the EU Ecolabel can also be hazardous substances. Therefore, to largely prevent direct contact of the personnel with the product and thus make handling much easier, products for commercial dishwashing are on the market, among others, which can be easily transported and refilled due to the packaging (small containers with powder or solids).

Aspects of packaging and transport

In the course of sustainability, more attention has recently been paid to adjusting the production and the transport routes of products and reducing packaging. Highly concentrated products and/or low water content are particularly suitable for reducing transport emissions.

Large containers for liquid products (drums) significantly reduce the amount of packaging, especially since these are often reused. These are used in particular in central dosing systems and are usually equipped with combined transport and storage containers, which makes their handling much more effortless.

Potential savings

Service and advice from detergent manufacturers can be used to apply the ideal product to the machines and as well as also to set the correct dosage of products. Products without service at a low price may lead to higher consumption volumes and costs. The manufacturers of cleaning agents are happy to provide customer-specific advice on the most suitable products and processes for the respective application and the individual local requirements.

Washing dishes sustainably in the commercial sector also means paying attention to some basic things when operating the dishwasher. In the first step of the dishwashing process, attention must be paid to a good pre-clearing procedure. Before the dishes are cleaned in the dishwasher, loosely lying food residues and, thus already, the most considerable dirt should be removed from the dishes. It is recommended to switch on and fill the dishwasher (tank system) immediately before use. Otherwise, the machine consumes unnecessary energy by continuously heating up to maintain the tank and boiler temperature in operating mode.

When operating dishwashers, care should be taken to ensure short drying times for soiled dishes, the correct loading of the dishwashing racks and effective utilization. Overloading the dishwasher often leads to insufficient cleaning or rinsing performance and, thus, unnecessary cleaning repetitions. Also, half-filled racks and conveyor belts should be avoided. Here it may be advisable to collect plates etc., first and then rinse.

In general, the correct dosage recommended by the manufacturer for the respective product and depending on the application. Overdoses should be avoided. This saves both costs and the environment. Automatically dosed products are preferable to those to be used manually to ensure a hygienic result. When purchasing a new dishwasher, look for a resource-saving model with good cleaning and rinsing performance.

A perfect rinse result requires several factors that should always be interlinked. The surfactant chemist Herbert Sinner (1900 - 1988), former head of detergent application technology at Henkel, defined four factors that influence every cleaning process: Chemistry, i.e., detergents and their concentration, mechanics, i.e., water pressure and circulation rate in the nozzles as well as uniform wetting of the wash ware, temperature and time. All four factors are interdependent, but their magnitude can be changed under certain conditions. They must be in exact proportion to each other and determine the success of the ware washing process. The crucial link and most important ingredient for clean dishes is water.

The ingredients of the water have an influence on the dishwasher. Minerals in particular can lead to deposits as soon as the water is heated. The more limescale is deposited on the machine parts, the higher the energy consumption and the need for detergent and rinse aid increases. In the end, additional maintenance and service costs are incurred - not to mention machine downtime.

Only by using water treatment can soft water detergents and neutral rinse aids be used. These are dosed much lower than cleaners for hard water and acidic rinse aids and are also more environmentally friendly. In addition, proper water treatment eliminates the need for many service visits (calcification, etc.). This in turn reduces the environmental impact through CO₂ emissions, as fewer trips are necessary.

To do justice to all sustainability aspects, the optimized operation of a dishwasher is inevitable. Support for this is provided by the Arbeitskreis Gewerbliches Geschirrspülen (Working Group Commercial Dishwashing) members, for example, in the form of the 'Compendium of practice for Commercial Dishwashing' (ISBN: 978-3-8440-8620-1). In addition to the printed version, this is also available on the homepage (akggs.de) in German and English.

General disclaimer

The authors have taken great care in reproducing all the information contained in these leaflets in accordance with the state of knowledge at the time of completion of the work. Despite careful preparation and correction of the typesetting, errors cannot be completely ruled out. Consequently, the authors and the publisher accept no responsibility and no subsequent or other liability arising in any way from the use of the instructions or parts thereof.