

COSMETIC INDUSTRY

No Reason for Worry Lines!

Decorative cosmetics such as waterproof makeup and long-lasting lipsticks, skin care from creams and serums to two-phase products or tinted day cream. Plus, hair and body care and sunscreens in a variety of formulations and textures: the cosmetics market is highly innovative, and products are complex. The same goes for cleaning product-contact parts of filling stations, where manual processes often leave quality managers with worry lines on their faces.

Safe and clean: Cosmetic GMP

Ingredients that provide hours of radiance on the skin or color on the lips cannot be removed from the face by water alone, nor from components in filling systems. And yet, water-based cleaning is a must in the cosmetics industry. On the one hand, to ensure the safety of employees, to protect consumers from solvent residues, and to meet the standards of DIN EN ISO 22716 – Cosmetics – Good Manufacturing Practice (GMP). On the other hand, to reduce the ecological footprint and obtain appropriate certification for environmentally friendly cosmetics.

**Common Processes – safe Options?**

When cleaning product contact parts, many manufacturers still rely on the following water-based processes: Immersion cleaning, COP cleaning, or purely manual soil removal. Immersion cleaning involves placing equipment in a solution of water and detergent, with a stirrer providing some mechanical action.

However, this is not sufficient to dissolve persistent contamination. Therefore, detergent is dosed at higher rates, or the equipment must be cleaned repeatedly in a time-consuming manual process.

Clean out of Place

COP – Clean out of Place – is another option. Here, parts are also disassembled, and residues are removed using high-pressure equipment. The performance is highly operator-dependent, and the temperature is often too low to protect staff. The same applies to manual cleaning: Again, the temperature limits the effect, and the process is time-consuming and labor-intensive. It is almost impossible to achieve a consistent result, and operators often follow the "much helps much" principle, processing components too much or applying too much detergent.

What's more, complex formulations mean that there are many different types of contamination. These push the above-mentioned processes to their limits.

If a lipstick is long-lasting, it will also be water-repellent, and persistent oily layers will form on the filling equipment.

If a tinted day cream has a high pigment content, it will look good on the skin. Still, the iron oxide leaves a thin powder coating on the part's surface, which is also difficult to remove.



Buckets full of Challenges

Too many variables to guarantee a reliable process:

This was also the opinion of the production managers at the french site of an international cosmetics company, who asked MAFAC to carry out a series of tests. The aim was to remove the very different types of contamination in continuous cleaning processes on a single system without leaving any residue.

If the tests were successful, the company would invest in a machine and move from manual to mechanical cleaning.

To perform the tests, the manufacturer sent pallets of 10-liter containers to Alpirsbach with the products ready for filling: Makeup, creams, suntan lotions, shampoos. In addition, various parts from the filling systems: valves, fittings, pipes, supply lines, seals, filling heads, and much more.

The tests made clear how efficient water-based cleaning is with our patented technology of simultaneous rotation of basket and spray system, and how precisely the various parameters can be set to safely remove a wide range of contaminations.

Meanwhile with MAFAC Vektorkinematics and MAFAC VAP, we are providing further innovative technologies specifically designed for demanding cleaning routines in sensitive industries.

Dipl. Ing. Tobias Lutz, MAFAC Application Engineer

Clean and sterilized by high Temperatures

The cleaning process should only involve the already certified detergents that are also used for manual cleaning. Environmentally friendly surfactants in low concentrations, specifically tailored to the high standards of cosmetics production.

More specifications: The cycle time per batch had to be a maximum of 45 minutes to make product changes faster and more economical.

Plus: The system had to be designed as a three-bath system. Media tank one for cleaning and media tank two for rinsing. Finally, media tank three for rinsing at 85°- 90° C to ensure sterility.

A test series with an unusual start: Cream up everything first

Given the specifications – maximum 45 minutes, three baths, complex geometries, high cleanliness – the application technology department decided to run the tests on a MAFAC PALMA spray-flood system. And to use ultra sonic as an added-on process.

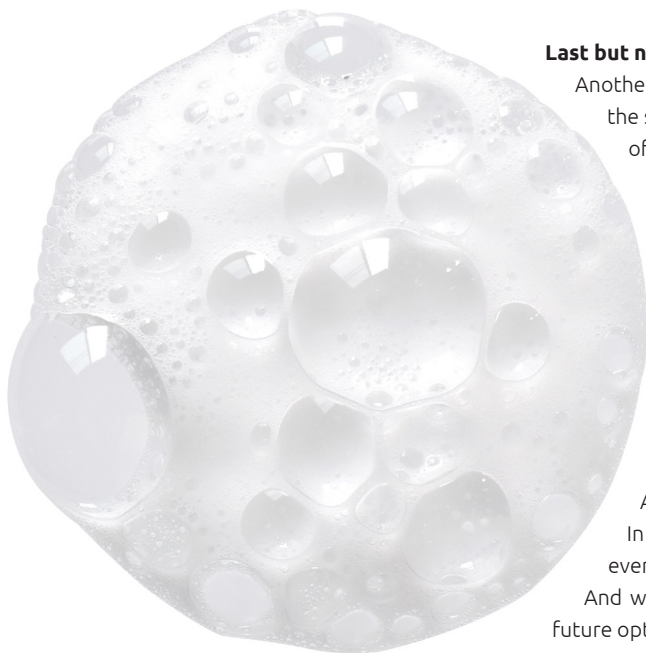
In order to develop the best program for each product, the equipment was thoroughly “creamed up” and then cleaned. This was done until the ideal combination of dynamic movement, temperature, time and water/additive combination was achieved. For water-soluble products, the programs were provided very quickly. The parts were completely clean in an average of 30 minutes.

Especially, waterproof makeup proved to be particularly persistent.

Wipe tests initially left slight flimic contamination on the inner contours. What to do?

Adjust one of the parameters mentioned before. In this case: Time. The cleaning process was extended to about 10 minutes, which, in combination with the rotation of the basket and spray system, reliably removed even the last residues.





Last but not Least: Shampoo

Another challenge: Shampoo. The product-carrying parts were easy to clean, but the shampoo residue caused heavy foaming in media tank one. The addition of defoamer was out of the question, as this element would be "alien" to the process and therefore undesired by the customer for consumer protection reasons.

But too, this last difficult task could be successfully solved:

Based on gained experiences and former approaches to handle foaming products, several constructive adjustments were made to prevent foam intruding the cleaning chamber.

Expectations more than met!

The customer, who was on site several times during the tests, concluded: All challenges were more than met!

In most cases the cycle time was well below the maximum 45 minutes and even stubborn residues were safely removed.

And with the MAFAC PALMA, not only the right system was found, but also future optimized cleaning in safe processes guaranteed.

MAFAC PALMA with 3 Baths

The test and later customer system was designed as a three-bath unit using MAFAC Kinematics and ultrasonics.

Today, MAFAC offers further innovative technologies specially developed for highly sensitive industries and applications.



What drives us, what we offer

MAFAC. That meant, and continues to mean, the vision of setting industrial parts cleaning into motion.
By water, without solvents.
To protect people and environment.

Today, this vision is motivation for about 100 people at MAFAC, who are passionate about developing and perfecting innovative technologies. Patented technologies for faster cleaning and targeted drying. For reproducible best results and sustainable, high process reliability.

With these water-clear advantages and decades of in-depth expertise, we are a trusted partner to well-known companies in various fields of application.

Based on the MAFAC machine portfolio, we implement efficient cleaning solutions tailored to industry and customer-specific requirements - from quick basic cleaning to high purity.

And in everything we do, we remain true to our core principle. Stay in motion, to expand our position as technology leaders into new industries and new markets.

MAFAC optimizes your cleaning process: Technologies | Cleaning systems | Process solutions | Services | Turnkey solutions

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