

## OPTIMISING CLEANING RESULTS AT LOW COST

# More quality, less expenditure

When it comes to new component ranges, new customers or increased demands, the question of whether the existing cleaning system is still sufficient is often raised. In this article, four leading cleaning plant manufacturers describe how component cleanliness in existing plants can be increased without having to invest in a new plant.

Many existing cleaning plants offer sufficient potential to cope with the higher demands of component cleanliness. Very often, minor modifications can achieve significantly improved results. Four cleaning plant manufacturers present different successful approaches here.

**A thorough analysis of existing plants**  
According to cleaning plant manufacturer LPW, assessing the improvement

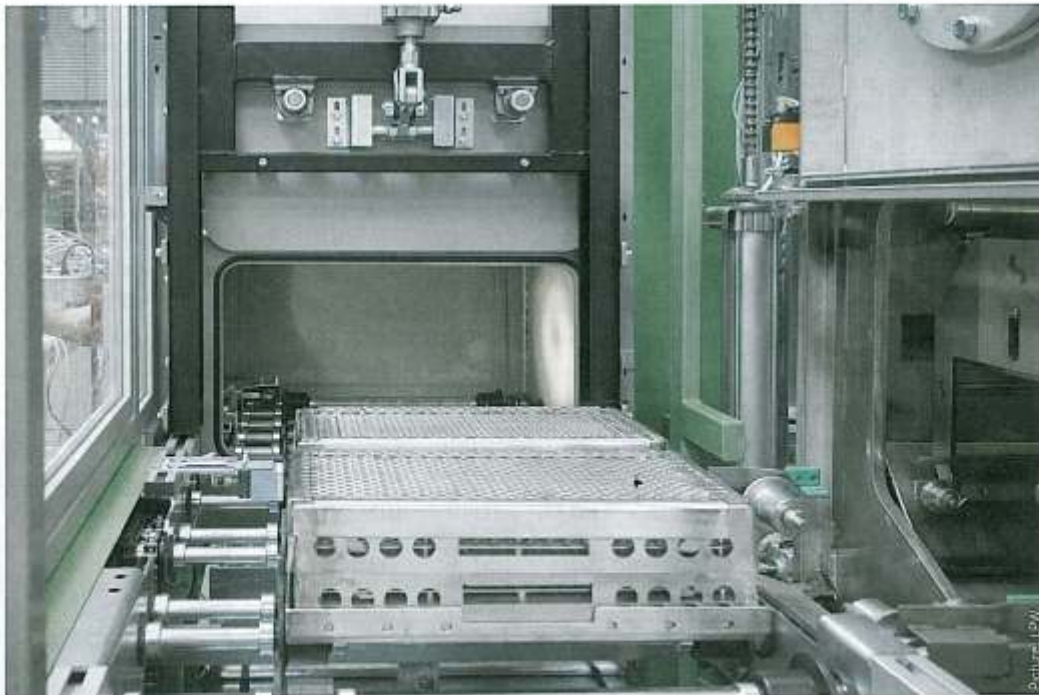
potential of an existing plant in terms of component cleanliness should be a two-step process: the first step is an assessment of the existing abilities of the old system, in terms of how it can be improved as required. The second step is to establish how these abilities can be sustained over a defined period of processing.

The assessment of existing abilities concentrates on four essential basic factors of an aqueous cleaning plant:

1. Washing mechanisms such as pressure and flood quantities as well as supporting processes such as ultrasound
2. Suitability of the cleaning media used
3. The washing time available and the washing time actually required
4. The actual and suitable media temperatures

The last two points are parameters that can positively or negatively affect the other factors.

The cost-effective optimisation of an existing plant can usually be achieved with an assessment of and potential changes to the chemistry currently being used. Often, the optimising potential also depends on technical process programming or adapting existing equipment. However, this requires an open



The output of existing cleaning plants can be increased at minimal cost



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and flexible programme structure and sufficient experience.

If this is not sufficient, the plants can be retrofitted, as appropriate, with suitable pressure flow or ultrasound systems. These are the most obvious possibilities. To that effect, in the second step the media preparation of the whole system is checked to determine whether the basic ability of the machine can be sustained over time. Here, the durability of the media preparation systems (filtration, separation of suspended solids and oil discharge capability) are checked.

It is important to bear in mind that the integration of performance-enhancing components is only economically viable when the existing basic systems are already designed to a high standard. Often, such considerations fall because of a lack of quality in the existing plant. It is advisable to seek in-depth advice before deciding to convert or upgrade your system.

#### Adapting cleaning agents and process temperatures

Cleaning plant manufacturer Mafac uses a practical example to illustrate what custom-made process optimisation can offer the user. A manufacturer of high-quality niche products in a copper alloy uses two of Mafac's machines to clean brass components with a diameter of 300-400 mm.

The point of departure for the optimisation of the cleaning processes was the increased individual cleanliness demands. At each departure point, the three-tank cleaning systems (Mafac Malta) had already been in operation for many years, with the cleaning results corresponding to the original demands. An analysis of the process showed that the cleanliness standards demanded by the operator could generally be achieved with the existing available machine out-

put and configuration. The measures consequently concentrated on the optimum fine tuning of the most important process parameters. With the aid of a series of tests with different cleaning options and wash cycles, the chemical composition of the cleaning medium was ideally adapted to the existing conditions and the process temperature was increased.

By installing a mechanical fine filtration system as well as a user-specific oil separator, the tanks' operating life could be effectively extended and the residual dirt readings were reduced. By individually adapting the component carriers, process quality was also improved: plastic inserts now reduce the risk of damage to the parts to a minimum.

Peripheral aspects of the process were also examined, in particular how the parts were manufactured and how they were treated after cleaning. For example, as a result of this analysis it was strongly recommended not to manually clean parts afterwards, as this affected the cleanliness counterproductively. In addition, a clean area beside a dirty area should have specific requirements, for example that smoking after cleaning is forbidden and that packaging material should be covered.

#### Improving media preparation

Cleaning plant manufacturer Karl Roll modified several single-chamber flooding plants at various locations within a large car supplier factory, for use with hydrocarbons and aqueous media. The goal was to improve the cleaning results and process reliability. This was achieved by integrating a bypass filtration device for the storage tanks. A sophisticated modification of the plant's pipework enabled the permanent filtration of the medium in the respective receiver tanks: the fluid, which at this moment is not

being used in the work chamber as a process media, is circulated through the filter. In line with this modification, existing bag filters were supplemented or replaced by cartridge filters for deep filtration. In addition, an extra integrated analysing filter and a device that measures differences in pressure allow the filtration quality to be easily monitored.

These modifications enable the plant to achieve significantly improved residual dirt values. In addition, the analysis filter and pressure difference measuring device ensure increased process reliability.

The plant manufacturer Adunatec has a chamber cleaning plant (Aduna K100) in its product range which can be upgraded to suit individual needs. The plant can be purchased as a single-bath model for simple cleaning jobs and later, even years later, can be extended into a 2- or 3-bath plant for the highest cleaning demands.

In addition to the upgrade with extra rinsing and/or passivating baths, the plant can meet even higher cleaning demands with the addition of efficient, subsequently built-in fine and extra-fine filtration, as well as through the possibility of being fitted with ultrasonic cleaning devices. A prerequisite for the installation of the highly efficient ultrasonic plate transducer is the purchase of the 'Precautions for ultrasound installation' option. In addition, the plant can be retrofitted with an oil separator and an ion exchanger or a reverse osmosis device for generating demineralised water. For improved bath care, Adunatec also offers a specific package (AdunaCare). —

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