

Low Temperature Aqueous Cleaning

Aqueous parts washers commonly used in the industry today typically operate at higher temperatures (140°F+). While in some cases elevated temperatures may improve the cleaning effectiveness, there are many applications where low temperature cleaning (120°F and less) will easily meet cleanliness requirements and offer significant benefits.

Advantages

Low temperature cleaning systems are more energy efficient and reduce operating costs through reduced heating and ventilation requirements.

High part temperature may disrupt subsequent steps in the manufacturing process such as leak testing, gauging and assembly. Low temperature cleaning can eliminate this problem without the need to add on costly part cooling systems.

High operating temperatures can discolor or corrode some aluminum and brass alloy parts. Operation at low temperature avoids this problem.

Reduced heat loss from the cleaning system provides a more comfortable operator environment.

Prolonged solution life is realized as losses to evaporation are reduced and the lower operating temperature allow oils to more easily separate and float on solution surface so they can be skimmed off more effectively.

Disadvantages

The only shortfall of cleaning at lower temperatures is the increased difficulty in drying the parts since there is less heat stored in the part to aid evaporation. PROCECO has extensive experience with a wide variety of drying technologies and can incorporate one of our standard drying modules into the cleaning system to ensure parts are completely dry. Please refer to our technical paper on "Drying after Aqueous Cleaning" for more information.

Applications

Low temperature cleaning is ideally suited for in process and final cleaning of new manufactured parts to remove machining fluids, chips and shop dirt. PROCECO has a fully equipped test lab to evaluate applications and determine if low temperature cleaning is suitable. By working together, we can develop the optimum cleaning process for you.

Chemistry

The main requirement for detergents is that they be non-foaming at low temperature operation in spray washers. All of the major detergent suppliers as well as PROCECO offer detergents suitable for low temperature cleaning. Many of these are environmentally friendly, near neutral cleaners (which reduce the cost of disposal) that are free rinsing and have corrosion inhibitors and in some applications can eliminate the need for a second stage rinse.

Equipment

Washing equipment for low temperature operation is similar to other washers. In some applications, higher pump flows and pressures or specially designed spray manifolds are used to provide the cleaning performance normally supplied by more aggressive detergents and higher temperatures. Cost of these features is easily offset by cost reductions resulting from reduced heating, insulation and ventilation requirements.