

Technical Explain

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6 August 2024	MBtech Flux Cleaner How it works	1

Introduction:

[MBtech](#) is a French manufacturer of cleaning machines founded in 1993, specialized in applications in the electronics assembly industry.

The portfolio consists of machines for:

1. Cleaning Stencils, Squeegees and Misprinted boards
2. Removing flux residue after soldering, such as on PCBAs, Wafers, Lead Frames and Power modules
3. Cleaning Solder Pallets, Reflow oven Filters, Heat Exchangers, Coating Frames and other mechanical parts.

These applications require different cleaning fluids and other cleaning methods, which means they cannot be properly combined in one machine.

That is why MBTech carries the three groups mentioned.

The attached brochure provides an overview of all available machines.

This document only contains additional information about the product group "Flux cleaners". Please let us know if you would like to receive more information about one of the other product groups.

All systems in the MBtech Flux Cleaning group use the same Spray-under-Immersion cleaning method.

The group consist of 5 different models:

- NC25E, for low to medium volume flux cleaning applications
- NC25 for medium to high production volumes
- NC25AL for high volume production
- NC25XL, for large board cleaning applications
- NC25XXL, custom built solutions for extreme large boards upto 1500mm

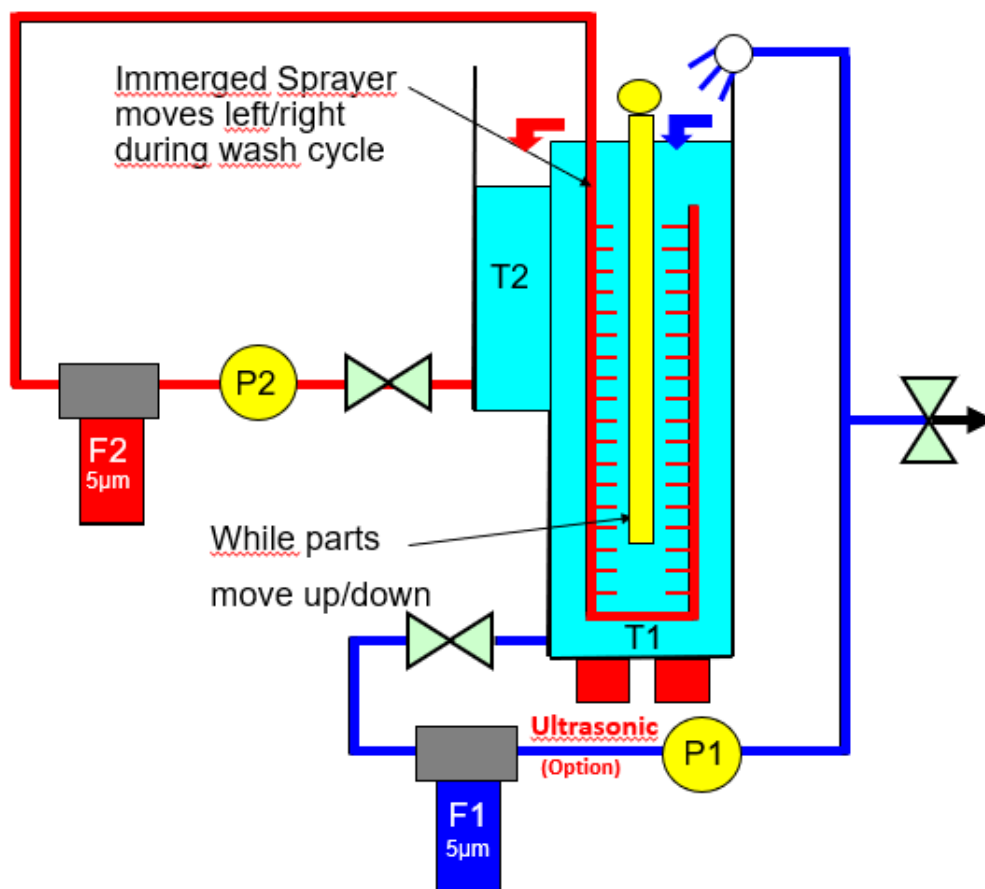
Spray-under-Immersion. MBtech offers a unique patented Spray-under-immersion cleaning and filtering method that proves to be a very effective method for removing flux residues from PCBA's, Wafers and other soldered products.

One or more product are mounted in a frame and vertically completely immersed in a bath with heated cleaning fluid. An immersed Spray bar moves from left to right during the washing cycle while spraying fluid from both sides against the product. At the same time the product is moved up and down to allow the fluid to contact every part of the product efficiently. Heavy paste parts fall down and are sucked out from the bottom of the washing chamber and filtered out through a microfilter, before the liquid is returned into the bath. Any floating flux residues continuously overflow into a smaller reservoir from where they are also extracted and filtered out. This prevents these floating parts from soiling the products when they are removed from the bath. The return of both fluid-flows is made through two spray bars located just above the main reservoir. Products are sprayed with freshly filtered liquid when are taken out. This will remove the last possible remaining residues.

Optionally MBtech machines can also be equipped with an additional ultrasonic transducer in the wash tank.

The diagram below clarifies how it works.

PATENTED SPRAY UNDER IMMERSION



In this way, flux residues can be completely cleaned off in 10 to 15 minutes, depending on the application and contamination.

After cleaning, the products are automatically moved to a Rinsing bath for DI water rinsing.

On NC25e a single Rinse is available, on all other models a second Rinse bath is passed prior to drying. This allows the DI water filters to last longer, so more suitable for higher productions volumes.

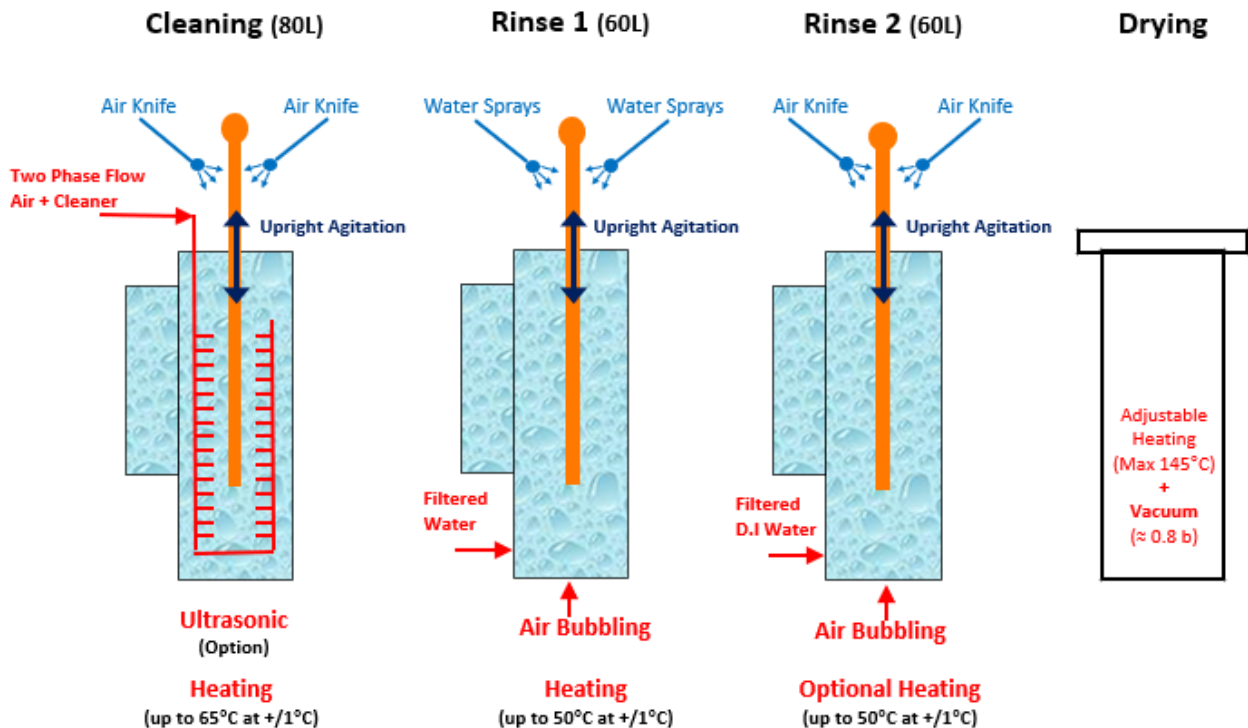
DI-Water in these rinsing bath's is continuously monitored for conductivity and close-loop filtered through a Resin and Carbon Filter.

MBtech offers Inox filter units that easily can be regenerated by the end-user, to limit the operational cost and avoid delay caused by suppliers.

After Rinsing, the products are automatically transferred to a Vacuum drying chamber.

Vacuum drying allow drying at lower temperatures, reducing the drying time and heating cost, but also avoiding potential damage to your products.

UNIQUE CONSTRUCTION & TRANSFER



The transfer from one bath to the next step is automated with a lift. Processes run simultaneously, resulting in a cycle time of 10 to 15 minutes, including drying, when running continuous production.



This semi-inline working method allows high volume production, while batch cleaning machines often take upto 2 hrs before a batch of cleaned and dried boards becomes available.

Models NC25e and NC25 are equipped with an integrated input and output buffer for 5 product racks each. Model NC25AL is available with and external buffer for 15 or 25 racks on both sides of the machine, to allow longer unattended cleaning or working outside the regular shift hrs.

Spray-under-Immersion vs Spray in Air: More Efficient, cost-saving and more environmentally conscious.

MBtech builds the most efficient flux cleaners with the lowest energy and fluid consumption in our industry. This is because the products are completely immersed in a slightly heated bath of cleaning fluid, allowing 100% contact and soak with the surface to be cleaned. The spray nozzles do the "mechanical cleaning work"

In most "spray-in-air" machines, products are place next to each other under angle, just like filling your dishwasher at home. This causes shadow effects, preventing the fluid to reach all products effectively. In MBtech carrirers , each products is place in the same surface, allowing the cleaning nozzle to reach both sides of all products in the carriers perfectly.

The immersion in a bath prevents unnecessary evaporation and cooling of the cleaning fluid while spraying, as is the case in spray-in-air machines (similar to your dishwasher at home).

Because cleaning and rinsing is performed in independend washing tanks, far less cross contamination can take place. In the vacuum drying chamber, only the products need to be dried, while in a spray in air machine, the complete interior of the machine is also rinsed and dried during every cleaning cycle, taking more time and energy and increase the use of fluid up to 5x more

All MBtech machines are completely closed-loop, meaning that no cleaning fluids or rinsing water is discharged to the sewer, everything is filtered and returned to the machine.

Cleaning agent:

The patented cleaning method haa been developed based on cleaning agents from the cleaning chemistry specialist Zestron. To guarantee good results and prevent any damage to the machines, we therefore only offer the machines in combination with Zestron liquids.

A range of chemistry is available, depending on the flux types that must be removed. We offer an indepth questionair to investigate your needs and Zestron can perform Free of Charge cleaning trials in an MBtech machine with the recommended cleaning agents to prove the process, prior to buying the equipment.

Most Zestron cleaning agents are water based and the concentration must be strictly monitored to maintain the cleaning efficiency. We offers easy to use manual testkits or you may choose for the optional embedded "Zestron Eye" measurement cell + automated refill and concentration adjustment.



References:

More than 500 MBtech Flux cleaners are in use worldwide, in the Benelux by well-known companies such as Thales, KLM, VDL-TBP, Neways, Philips, NXP, Sabca and Patria.

They are very reliable machines that require little maintenance and last for many years.