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cleanness like this...

By EasyBraid Co.

# FLUXCLEAN T

Full automatic pallet cleaning system for high throughput



Although selective soldering with special selective soldering systems becomes more and more popular, still there is a lot of high-capacity processes, using solder wave and solder pallets.

Solder pallet itself is a precision tool, not really cheap, and it's wearing is a major concern of all users. Our long-term studies have shown, that main reason of damaging the lower surface of solder pallets is not an often mentioned ultrasonic cleaning, but rest moisture, which penetrates into the pallet material during long cleaning in simple baths at room temperature.

We have developed and tested a complete process, which seems to be comparably shorter than so far used processes and also protects pallets from fast wearing.

Machine have an unbeatable capacity, designed for big facilities with lot of pallets and short time to return pallets back to line.

**NEW MACHINE !  
UNIQUE SYSTEM**



## Main technical features

- Fully automatic operation. After driving pushcart into inlet/outlet box, process is started by one button.
- Cleaning section has two pumps:
  - spray under immersion pump with nozzle system in dedicated configuration - (optimized by numerical simulations and trials with model)
  - second pump runs a filtration loop from the deep overflow to reduce foam problems.
- Cleaning bath is exhausted to prevent smell on the workplace.
- Rinsing has a heated bath with pump. Mechanical filters and spray nozzle system in the chamber.
- Drying section has two fan, heaters integrated in channels. Circulation and air ventilation is controlled by software in order to control the temperature speed optimally and to achieve maximum drying speed.
- Machine is provided by a spillage pan.
- Machine processes always two basket in cycle. While one is being cleaned, the other is rinsed and dried.

## The cleaning process has three phases:

### 1. Cleaning process

FLUXCLEAN T uses a hot spray-under-immersion process. Elevated temperature together with sophisticated design of spray-under-immersion bath has several advantages:

- Fast cleaning with intensive turbulence in the bath
- Lower foam generation than at spray-in-air or air whirl processes
- Cleaning bath is provided by filtration – this helps to depress foaming and prolongs the bath- life.



### 2. Rinsing process

Rinsing by spray-in-air at elevated temperature. This is done direct in the drying chamber. Water circulates in a close loop. It is automatically refilled and overflowed into drain. Flow can be programmed by the software.

Using of hot water has following benefits:

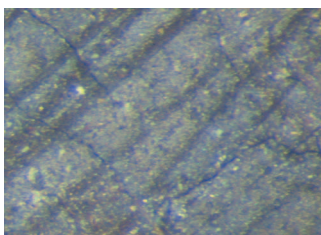
- Prevention of foaming
- Speeding up the rinse process
- Helps to accelerate drying.

### 3. Drying process

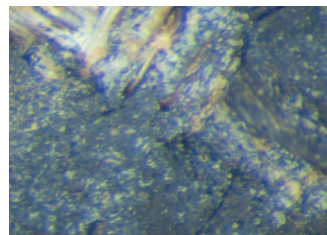
- Drying/rinsing chamber has a close-loop air circulation with heaters and fans inside of chamber for the optimal efficiency (lowest possible radiation and thermal lost, short drying cycles even at full chamber.
- Ramping- up the temperature from about 50°C (rinsing temperature) to 110°C provides an optimum drying procedure for a proper, but enough gently drying of the pallet material. This is a key of the success to prolonging the lifetime of pallets.
- Pallets containing internal moisture, submitted to IR radiation shock on solder line preheat, shows cracking of the surface, later exposition of glass fibre reinforcing structure. This leads to increasing moisture absorption and the degradation process accelerates.
- Insufficient drying of pallets is, unfortunately an attribute of many current cleaning systems)



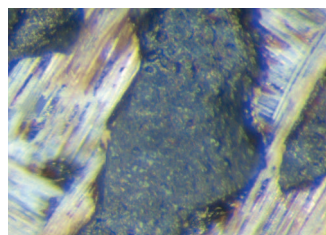
## Example of repeated heat- shock degradation of CDM material



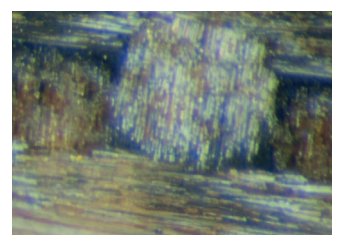
1. Cracks



2. First woven glass exposed



3. Complete first layer glass exposed



4. Second layer glass exposed

## Handling

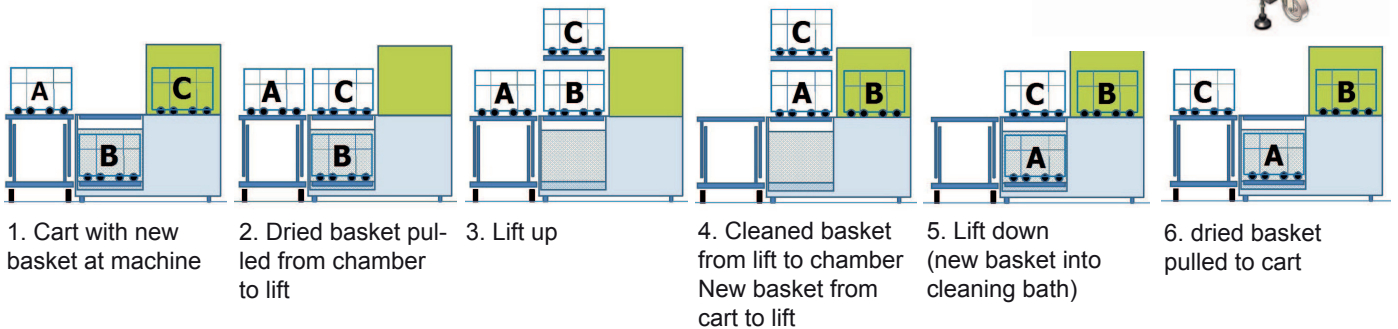
- Solder pallets are cleaned in baskets.
- Transport of basket from solder line to cleaning machine is organized in pushcarts to optimize ergonomic requirements by loading at the solder line.
- Important for the pallets lifetime is handling only one handling piece by piece at the soldering line.



- Operator drives pushcart into loading position and starts process.
- Transportation of basket between chambers runs automatically.
- Handling system enables to unload new basket and load the previous cleaned basket to the same pushcart. This substantially shortens the operator's assistance.
- Operator is protected from contact with moving system and cleaning agent.



## Phases of basket shifting during loading/ unloading



## Control system

- Machine is controlled by PLC, with clear values displayed on the colour touch screen.
- Start / stop and routine operation pushbuttons are mechanical – enough robust for the expected harsh environment.
- Week cycle programming to minimise idle time

**CLEANING**

TEMP	99 °C	No#	Time	SP	BL	U
		1	99	On	On	On
		2	99	On	On	On
		3	99	On	On	On
		4	99	On	On	On

**RINSING**

TEMP: 99 °C TIME: 99 [min]

**DRYING**

TEMP: 999 °C TIME: 99 [min] FLAP OPEN TEMP: 999 °C

Prog No. 99

MENU MAINSCREEN SAVE

**WARNING: See manual before manipulation**

CLEANING	RINSING	DRYING
Filter Pump <input checked="" type="checkbox"/> On	Spray Pump <input checked="" type="checkbox"/> On	Heater <input checked="" type="checkbox"/> On
Spray Pump <input checked="" type="checkbox"/> On	Heating <input checked="" type="checkbox"/> On	Heater <input checked="" type="checkbox"/> On
Bubble <input checked="" type="checkbox"/> On	Solenoid <input checked="" type="checkbox"/> On	Fan <input checked="" type="checkbox"/> On
Ultrasonic <input checked="" type="checkbox"/> On	Door Closed <input checked="" type="checkbox"/> On	Exhaust <input checked="" type="checkbox"/> On
Solenoid <input checked="" type="checkbox"/> On	Door Open <input checked="" type="checkbox"/> On	Input Flap <input checked="" type="checkbox"/> On
Heater <input checked="" type="checkbox"/> On		
Lift Up <input checked="" type="checkbox"/> On		
Lift Down <input checked="" type="checkbox"/> On		
Selected Switch <input type="checkbox"/> Off	LED Clean <input checked="" type="checkbox"/> On	Green Beacon <input checked="" type="checkbox"/> On
	LED Rinse <input checked="" type="checkbox"/> On	Blue Beacon <input checked="" type="checkbox"/> On
	LED Dry <input checked="" type="checkbox"/> On	Red Beacon <input checked="" type="checkbox"/> On
		Beeper <input checked="" type="checkbox"/> On

**CLEANING NOT READY**

set	actual	No	Time	SP	BL	US	PU
99	99 °C	1	99/99	On	On	On	On
99	99 °C	2	99/99	On	On	On	On
99	99 [min]	3	99/99	On	On	On	On
99	99 [min]	4	99/99	On	On	On	On

**RINSING READY**

TEMP: 99/99 °C TIME: 99/99 [min]

**DRYING END**

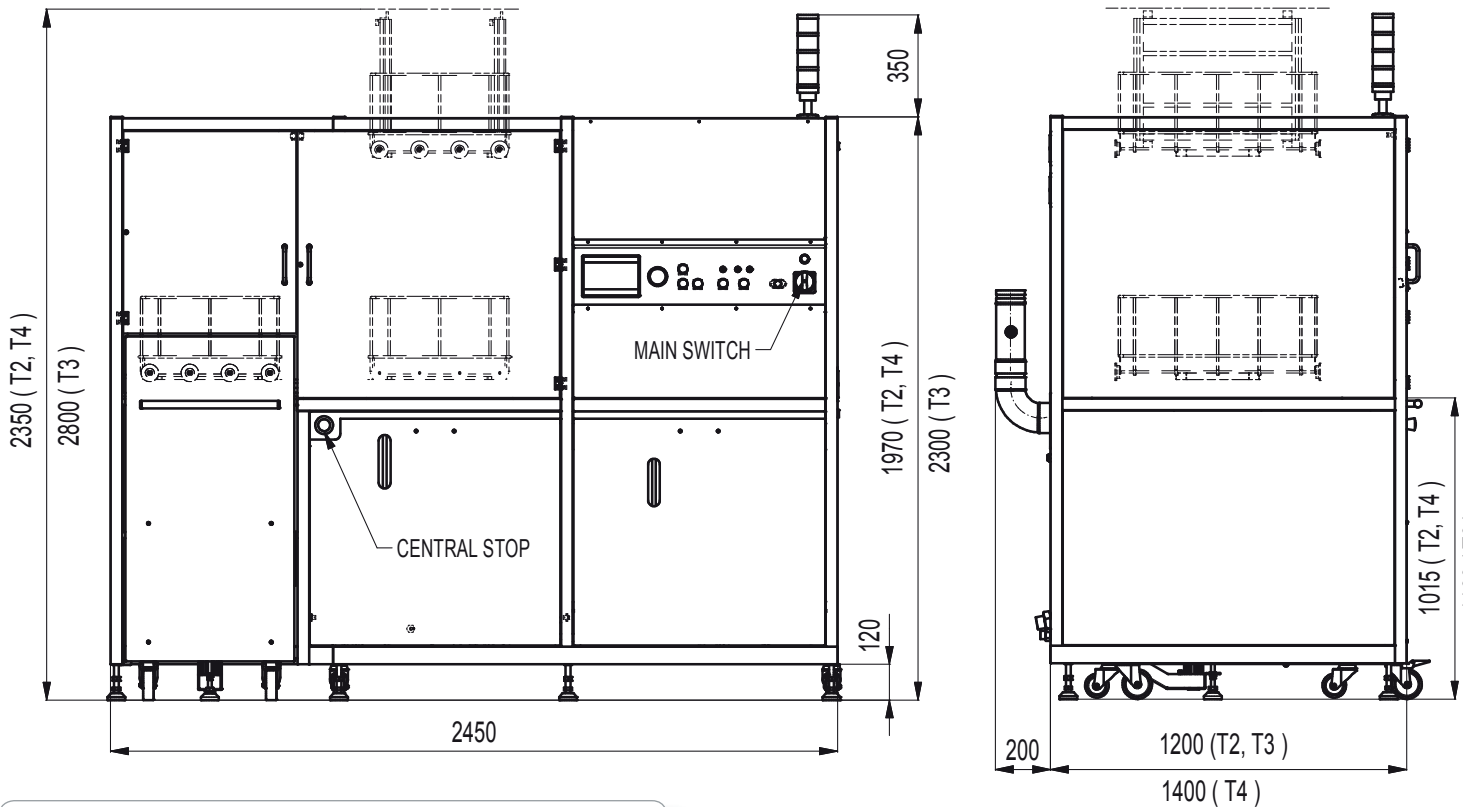
TEMP: 999/999 °C TIME: 99/99 [min]

MENU SETUP STOP CYCLES 99

WARNINGS NONE ERRORS NONE

## Technical data

	FLUXCLEAN T2	FLUXCLEAN T3	FLUXCLEAN T4
Effective basket dimension (L x W x H)	650 x 450 x 470 mm	650 x 450 x 620 mm	830 x 450 x 470
Maximal load in the basket	50 kg		
Inner bath dimension (L x W x H)	770 x 530 x 625 mm	770 x 530 x 775 mm	970 x 530 x 625
Cleaning bath volume	300 l	375 l	360 l
Rinsing bath volume	35 l	35 l	50 l
Temperature of cleaning bath	max 55 °C		
Temperature of rinsing water	max 55 °C		
Temperature of drying	max 110 °C		
Overall dimensions (L x W x H)	2450 x 1400 x 1970 mm	2450 x 1400 x 2300 mm	2450 x 1600 x 1970
Weight (empty)	650 kg	700 kg	750 kg
Input power	18 kW		
Mains	3+N+PE 230/400V, 50Hz		
Average power consumption during the process	6 kW		
Air pressure consumption	<1 l/min		
Exhaust port from cleaning	ø100 mm		
External fan	200 m3/hr		
Exhaust port from drying (fan integrated)	ø100 mm		
Control system	PLC OMRON		
Number of programs	99		



### PBT local distributor

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