www.aqueoustech.com
+(1) 951.298.8880
sales@aqueoustech.com

trident automatic defluxing & cleanliness monitoring systems

features and specifications guide

© 2020 Aqueous Technologies

CALIFORNIA

Aqueous Technologies is an advanced cleaning and technology company specializing in the manufacturing of cleaning and testing systems for the electronics assembly industry. Our fabrication, manufacturing and support is based in California. Inspired by water, our cleaning and cleanliness testing systems are sophisticated and brilliantly simple.

FABRICATION

Our equipment is manufactured in the United States of America. Fabrication materials, devices and vendors are all hand selected with quality and reliability in mind. We take pride in our work. Building these systems from the ground up allows for customizable products that will last.

© 2020 Aqueous Technologies

COMMITMENT

At Aqueous Technologies, we are enthusiastic about doing our part to help make this world a better place. We are committed to the principles of freedom, innovation and establishing long lasting partnerships with our customers, vendors and sales represtantives.

ABOUT TRIDENT

Trident is our 4th generation batch style defluxing system. Originally designed in 1992, our systems have changed through the years to address the challenges of modern cleaning applications, such as complex board geographies, low stand-off components and Pb free alloys. These systems are versatile and can be configured to match unique application requirements.

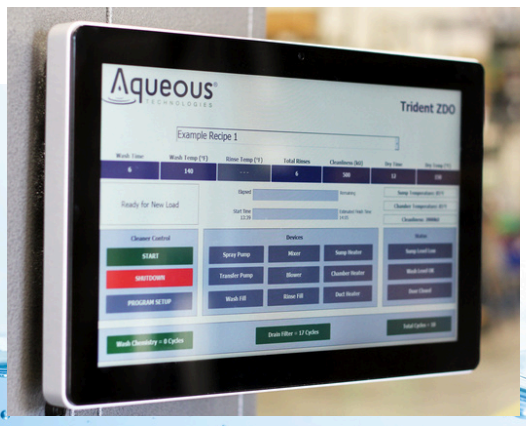
FEATURES

- shadow mitigating *focus wash* spray technology
- real time rinse cleanliness verification
- segregated wash and rinse tanks for minimal chemical consumption
- heavy-duty rolled stainless steel frame and panel construction
- advanced statistical process control (spc) data logging
- stainless steel plumbing network with swagelok connections
- sql multi-query database
- zero discharge wash and rinse cycles
- graphic touchscreen operator interface
- front loading chemical storage and maintenance tanks
- automatic chemical management and mixing systems
- high power hot air convection and radiant drying system
- *fresh water wash* DI only cycle and chemical sampling program

SMTA

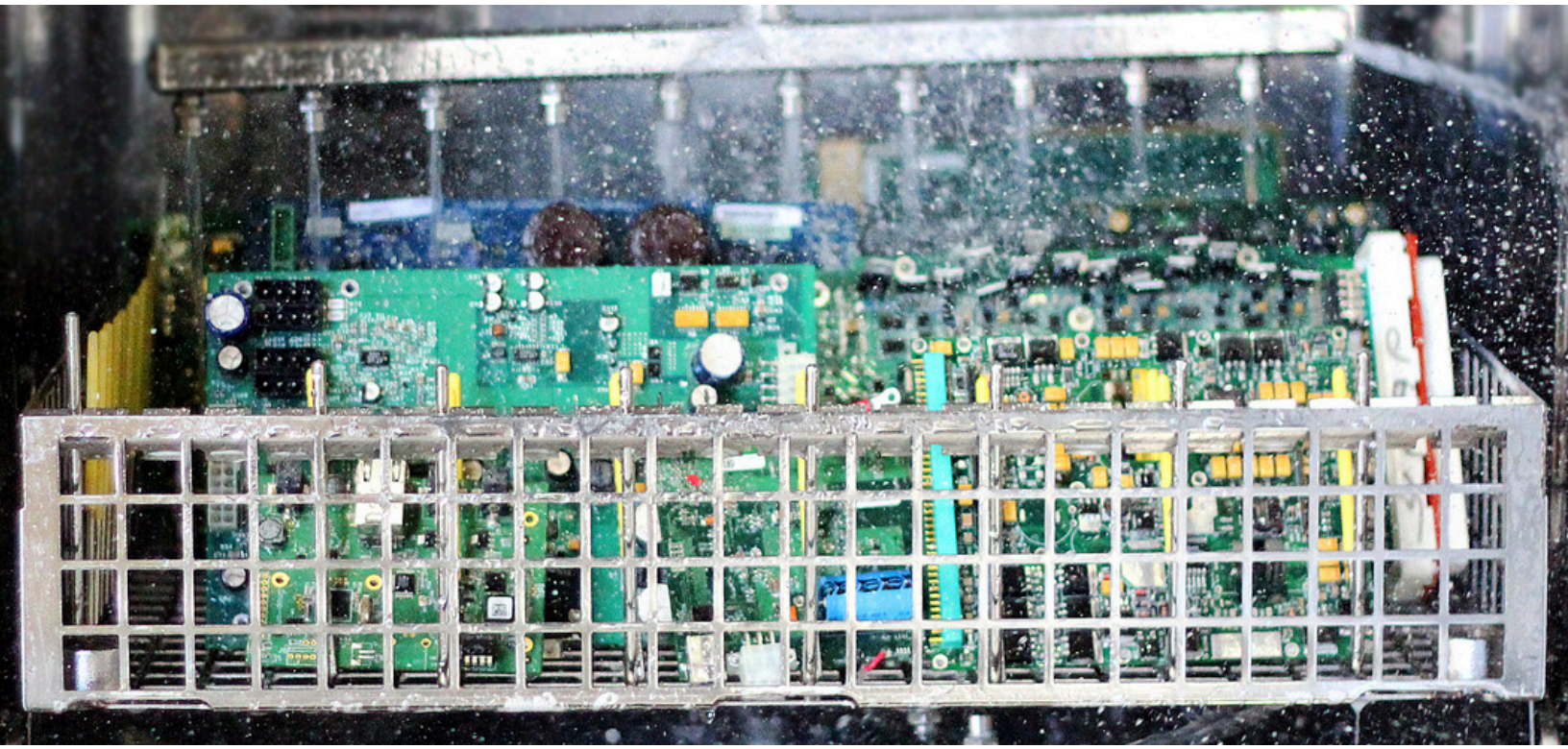
IPC

Association Connecting Electronics Industries®



© 2020 Aqueous Technologies

FOCUS WASH SPRAY SYSTEM©

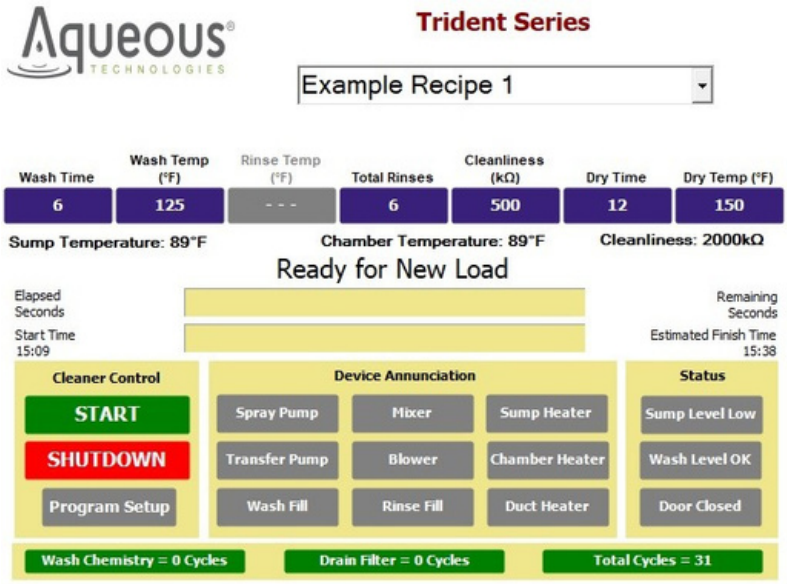


The fluid dynamics created with Trident's spray design direct precise flows of cleaning solution onto a batch of assemblies and under low standoff components. Our unique *focus wash* technology mitigates shadowing, addresses coverage and surpasses industry cleanliness standards.

2020 Aqueous Technologies

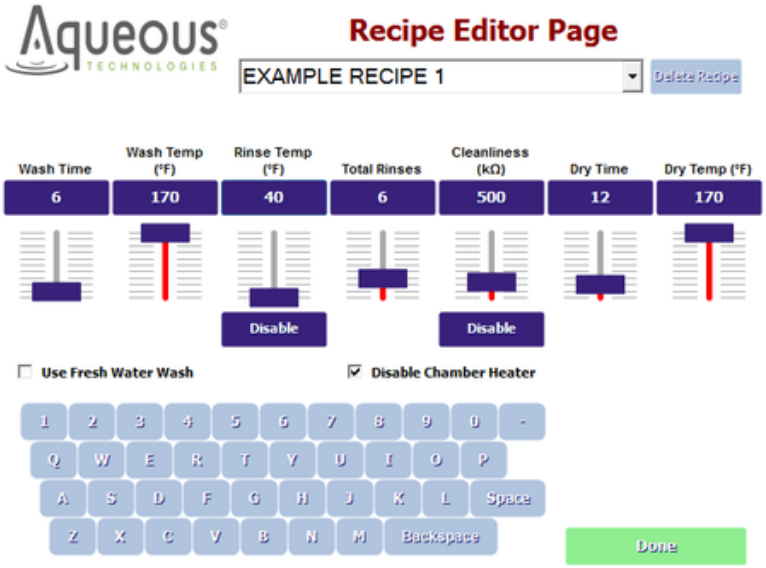
- asymmetrical fanjet nozzle array for maximum spray coverage & impingement
- ultra-low drag out design
- separate heating tanks for faster cycles
- shadow mitigating board rack oscillation
- adjustable tines for unique board positionings
- hand welded stainless steel manifolds
- all stainless steel plumbing network for wide chemical compatibility and high temperatures
- real time rinse monitoring to ensure full wash chemical removal
- easy to clean fine mesh drain screen

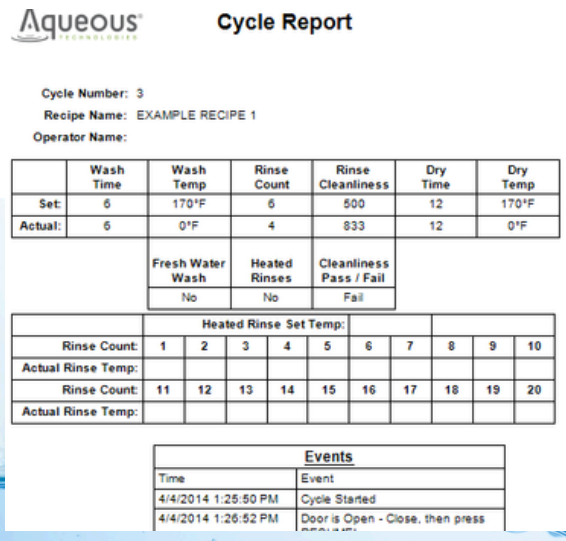
PROCESS CONTROLS



The control platform developed for Trident combines a simplistic operator experience with a versatile and robust program. Features include barcode scanning, an SQL database server, aSPC recording, real time cleanliness monitoring, multi-level password protection, data networking and virtually unlimited recipe storage.

Trident's recipe editor provides an easy to navigate experience for creating recipes and adjusting process variables such as temperatures and the real time rinse cleanliness verification feature. A built in keyboard and adjustable sliders give an operator options, while the password protection secures cleaning parameters for daily usage.




Aqueous TECHNOLOGIES

Cycle Report

Cycle Number: 3
Recipe Name: EXAMPLE RECIPE 1
Operator Name:

	Wash Time	Wash Temp	Rinse Count	Rinse Cleanliness	Dry Time	Dry Temp
Set:	6	170°F	6	500	12	170°F
Actual:	6	0°F	4	833	12	0°F

Fresh Water Wash	Heated Rinses	Cleanliness Pass / Fail
No	No	Fail

	Heated Rinse Set Temp:									
Rinse Count:	1	2	3	4	5	6	7	8	9	10
Actual Rinse Temp:										
Rinse Count:	11	12	13	14	15	16	17	18	19	20
Actual Rinse Temp:										

Events	
Time	Event
4/4/2014 1:25:50 PM	Cycle Started
4/4/2014 1:26:52 PM	Door is Open - Close, then press

Cycle information such as set and actual times, temperatures, final rinse cleanliness results, cycle interruptions, operator names, barcode data, pass/fail status and other recipe specific information is automatically stored into and spc data log and available for download/networking.

© 2020 Aqueous Technologies

SPECIFICATIONS

WEIGHTS AND DIMENSIONS

ZDO: 42.25 x 56 x 70 (991lbs)
LDO: 42.25 x 44 70 (791lbs)
CLO: 42.25 x 47.75 x70 (791lbs)

CERTIFICATIONS

CE
UL / CSA (3rd party certification and inspection optional)

POWER REQUIREMENTS

208-240 vac 3 phase 40 amps 60 Hz
380-400 vac 3 phase 30 amps 50 Hz

NOISE LEVEL

75 db

SPRAY TECHNOLOGY

Aqueous *focus wash* spray technology

CONTROL SYSTEM

Windows 10 operating system
Teguar all-in-one PC and graphic user interface

WATER REQUIREMENTS

inlet flow: 3-5 gpm (11-19 lpm) intermittent flow
rinse volumes (discharge): 3.3 gallons (423oz)
incoming pressure: 30-70 psi

EXHAUST REQUIREMENTS

6" static duct (non suction)

CAPACITY

single rack: 13 rows of adjustable tines, 19"x19" standard basket
double rack: 26 rows of adjustable tines, 2x 19"x19" basket
custom fixturing available

CONSTRUCTION MATERIALS

hrs - hot rolled steel frame
silver hammer tone powder coat finish
304 gauge stainless steel chemical plumbing
304 gauge stainless steel wash chemical and heating tanks
closed cell epdm seals

TEMPERTURE RANGES

wash and rinse: +170 f (76 c)
sump heaters: 240 vac 2000 watts
chamber heater: 208 vac 3500 watts
dry: + 170 f (76 c)

CHEMICAL MANAGEMENT

0-25% key switch operated with non-overflow level sensor
compatible with real time chemical management systems
fresh water wash chemical sampling feature
DI water only cycle option for OA flux

FILTRATION

5 micron pre-recycler filter (ZDO)
20 micron pre-drain filters (LDO / ZDO)
zero discharge rinse water recycler (ZDO)

DRYING SYSTEM

1 hp ODP motor 1500 cfm
air duct heaters: 240 vac 2000 watts
chamber heater: 208 vac 3500 watts

© 2020 Aqueous Technologies

MODEL SELECTION

TRIDENT LDO

ALL FLUX TYPES
ALL ALLOYS

LOW DISCHARGE
CLOSED LOOP WASH
FILTERED
DISCHARGE RINSE

BUILT-IN CLEANLINESS
MONITORING
TECHNOLOGY

FOCUS WASH
SHADOW MITIGATING
TECHNOLOGY

CHEMICAL STORAGE
TANK W/ ANALOG AND
DIGITAL LEVEL
GAUGES

SS WASH SOLUTION
TANK W/ AUTOMATIC
MIXING

20 NOZZLES (1 RACK)
40 NOZZLES (2 RACKS)

MULTI-QUERY ASPC
DATA SEARCH VIA SQL
SERVER

NA

CONVECTION AND
RADIANT DRYING
SYSTEM

TRIDENT CLO

WATER SOLUBLE FLUX
ALL ALLOYS

ZERO DISCHARGE
CLOSED-LOOP WASH

BUILT-IN CLEANLINESS
MONITORING
TECHNOLOGY

FOCUS WASH
SHADOW MITIGATING
TECHNOLOGY

NA

SS DI WATER TANK
W/ AUTOMATIC
RECYCLING

20 NOZZLES (1 RACK)
40 NOZZLES (2 RACKS)

MULTI-QUERY ASPC
DATA SEARCH VIA SQL
SERVER

CLOSED LOOP RINSE
WATER RECYCLER

CONVECTION AND
RADIANT DRYING
SYSTEM

TRIDENT ZDO

ALL FLUX TYPES
ALL ALLOYS

ZERO DISCHARGE
CLOSED LOOP WASH
CLOSED LOOP RINSE

BUILT-IN CLEANLINESS
MONITORING
TECHNOLOGY

FOCUS WASH
SHADOW MITIGATING
TECHNOLOGY

CHEMICAL STORAGE
TANK W/ ANALOG AND
DIGITAL LEVEL
GAUGES

SS WASH SOLUTION
TANK W/ AUTOMATIC
MIXING

20 NOZZLES (1 RACK)
40 NOZZLES (2 RACKS)

MULTI-QUERY ASPC
DATA SEARCH VIA SQL
SERVER

CLOSED LOOP RINSE
WATER RECYCLER

CONVECTION AND
RADIANT DRYING
SYSTEM

© 2020 Aqueous

TRIDENT XL

Able to accommodate assembly dimensions of more than double our standard Trident systems, XL yields more throughput volume and assembly clearance than previously possible in a batch defluxing application. Matched with Trident's focus wash cleaning engine, these hand-forged systems offer an unparalleled level of versatility while producing brilliantly clean results that our Trident operators depend on.

FEATURES

- XL hand forged cleaning chamber
- shadow mitigating *focus wash* spray technology
- real time rinse cleanliness verification
- XL spray bars with added nozzles
- XL door lock design
- available in single and dual rack configuration
- XL exhaust design
- available in all Trident configurations

2020 Aqueous

SERVICE AND SUPPORT

AQUEOUSTECH.COM

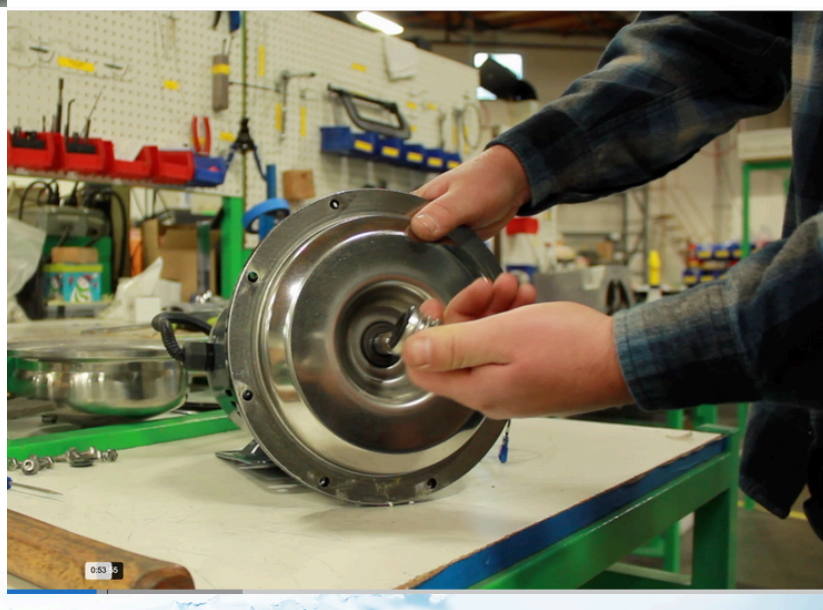
Our website is filled with service support articles, videos, white papers and other information on industry best practices and cleaning profiles. As well as links to our webinars, in person training seminars and the *Reliability Matters* podcast.

PHONE & EMAIL

With more than 30 years of cleaning and cleanliness testing experience at Aqueous Technologies, our support team is trained to trace symptoms to cause and share solutions in a direct and friendly manner.

VIDEO LIBRARY

A wide variety of service support videos are available on the topics of installation, maintenance and even larger service procedures. Our video library assists Trident engineers and maintenance technicians with performing services as effortlessly as possible.



© 2020 Aqueous

MADE IN USA

www.aqueoustech.com
+(1) 951.298.8880
sales@aqueoustech.com