QS 200/QS 300 WET

SEMI-AUTOMATIC QUICKSTEP WET (QSW) TOOL FOR WET ETCHING, LIFT-OFF & CLEANING

HIGHLIGHTS

- Suitable for R&D and pilot Manufacturing
- High reliability and low Cost-of-Ownership
- Highly configurable with a wide variety of options available
- Process modules are the same as in HVM tools – enables easy migration to volume production
- Customization possible for specific customer needs

QS 200/QS 300 WET

GENERAL INFORMATION & TECHNICAL DATA

Key Features

Obducat's highly successful QS 200/QS 300 WET platform provides the perfect solution for current and future R&D as well as pilot manufacturing requirements.

The platform flexibility enables the QS 200/QS 300 WET to cover a variety of applications such as LEDs, SiC components, 5G components, Si IC's, MEMS, Opto-electronic, Photonic components and Advanced Packaging

The systems can handle substrate sizes from:

- QSW 200 - 2" to 8" Ø or 2"x 2" to 6"x 6"
- QSW 300 - 2" to 12" Ø or 2"x 2" to 9"x 9"

Tool Configurations

The QS 200/QS 300 WET platform is highly configurable enabling a fit to almost any customer requirements while offering a superior cost efficiency. The tools are built in the materials compatible with the respective customer processes. There are dedicated standard configurations for Photomask Cleaning, Etching, Lift-off and general substrate Cleaning.

The tools are available as stand-alone tools which can be placed next to each other to create a mini-line of processing units.

This versatile tool can also process pieces from broken or damaged wafers. Manual loading and unloading of the substrates are very easy due to the unrestricted access into the process chamber.

For safety purposes an integrated and interlocked automatic process chamber door containing a safety interrupt sensor is standard. A fully automated dry-in, dry-out robot loading is optional.

- Operation control unit with color touch display and windows user interface
- Unlimited process recipe / flow storage capacity plus USB port
- Process parameter tracking
- Ethernet port

Tool Options

Piranha Clean

- Application is delivered by an atomizer nozzle
- Chemicals will be mixed in atomizer nozzle right at the point of use
- Reaction temperature on wafer > 100°C
- Chemicals are delivered from pressurized canisters
- Recipe programmable sweep movement of dispense arm
- Hot DI water rinse as an option

SC1 Clean

- Application is delivered by an atomizer nozzle
- Chemicals will be mixed in atomizer nozzle right at the point of dispense
- Chemical flows for NH_4OH, H_2O_2 and H_2O are independently adjustable
- Heated H_2O line to obtain a working temperature of 60° to 70°C
- Chemicals are delivered from pressurized canisters
- Recipe programmable sweep movement of dispense arm

SC2 Clean

- Application is delivered by an atomizer nozzle
- Chemicals will be mixed in atomizer nozzle right at the point of use
- Chemical flows for HCl, H_2O_2 and H_2O are independently adjustable
- Heated H_2O line to obtain a working temperature of 60° to 70°C
- Chemicals are delivered from pressurized canisters
- Recipe programmable sweep movement of dispense arm

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GENERAL INFORMATION & TECHNICAL DATA

Solvent Clean

- Application is delivered by a puddle or spray nozzle
- Chemicals are delivered from pressurized canisters
- Chemical flow adjustable via flowmeter
- Recipe programmable sweep movement of dispense arm
- Compatible to most solvents
- Some solvents can be applied with high pressure (e.g. NMP, DMSO)

Mechanical Substrate Cleaning

- Brush scrubber – This uses rotating brushes and a pressing force. A special chuck design is used for front and backside scrubbing. A supplementary DI water line is used for rinsing. Smaller brushes are available for treating small pieces.
- High pressure – For DI water or solvents. The recipe uses a programmable sweep movement of dispense arm. The pressure is adjustable from 10-180 bar. DI water can be re-ionized with CO_2.
- Megasonic nozzle – Energy transportation is done by DI water. The recipe uses a programmable sweep movement of dispense arm. The Megasonic can supply from 1 to 5MHz.

HF Clean / Etch

- Application is delivered by a puddle nozzle
- Chemicals are delivered from a pump (no pressurized canisters)
- Chemical flow adjustable via flowmeter
- Recipe programmable sweep movement of dispense arm

Metal / Si Etch

- Application is delivered by a puddle or spray nozzle
- Chemicals mixing via atomizer nozzles or static mixer
- Chemical supply either via pressurized canisters or via pumps
- Chemical flow adjustable via flowmeter
- Recipe programmable sweep movement of dispense arm
- Compatible with most acids and caustic mixtures

Multiple Chuck solutions – Low contact, Bernoulli

Chuck solutions for Etching & Cleaning:

- Standard wafers that are wet treated use low contact chucks, where the wafer is held in place by supporting pins and centripetal force fixing it during the high-speed drying.
- Squared substrates are held at the corners by alignment pins using low contact chucks. The advantage of this chuck is the entire backside can be rinsed.
- If the backside must be protected against aggressive (etching) medias, a Bernoulli chuck can be used. This chuck blows nitrogen which protects the entire backside against chemicals. Alignment pins hold the wafer in place and enables high spin acceleration.
- If alignment pins are not allowed, a Venturi chuck can be used. Nitrogen is injected into the chuck creating a vacuum in the chuck center by means of an integrated Venturi nozzle. The nitrogen blows out close to the wafer backside edges. This also protects the wafer backside against chemicals.

Temperature controlled chemical lines

When chemicals are supplied from the wafer fab or stored outside the cleanroom the temperatures are different to the cleanroom environment causing chemicals to react and perform differently with changes in temperature. This can result in processing variations. This option can ensure a repeatable temperature level of the chemical's substrate-to-substrate at point of dispense.

Automatic substrate Load/unload

A fully automated dry-in, dry-out substrate load/unload system can be incorporated into the tool.

Connection to wafer fab Manufacturing Execution Systems

The tool can be configured to enable connection to various Manufacturing Execution System (MES) interfaces such as:

- SECS / GEM
- OPC/UA
- Customer specific interfaces

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TECHNICAL DATA

FACILITY REQUIREMENTS

Clean-room compability	Class 10, ISO 4
Room Temperature	20-24°C
Relatively Humidity	40 - 55 %
Power	3 x 208 - 230 VAC / N / PE, 50 - 60 Hz, 16-32 A
Compressed Air (CDA)	8 bar
Vacuum	-0,8 bar
Nitrogen (optional)	4,0 bar

SYSTEM DIMENSIONS

Dimensions (W x D x H)	1000 mm x 1299 mm x 2010 mm*
Weight	Approx. 800 kg

*not including auxiliary equipment

CONTACT US

www.obducat.com

Obducat Technologies AB
Scheelevägen 2
22363 Lund
Sweden
Phone: +46 46 10 16 00

Obducat Europe GmbH
Robert-Gerwig-Str. 9
78315 Radolfzell
Germany
Phone: +49 7732 97 898-0
Fax: +49 7732 97 898-99

Obducat USA Inc.
851 Burlway Rd, #605
Burlingame, Ca 94010
USA
Phone: +1 510 871 0041
Phone: +1 619 565 4844

Sales Office China
Obducat Technologies AB
12F, Sail Tower, 266 Hankou Road,
Huangpu District,
200001 Shanghai
P. R. CHINA

Email:
sales@obducat.com

Visit our website for more information on local sales offices
www.obducat.com

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