

Smart solutions for mixing
and supply of CMP Slurries

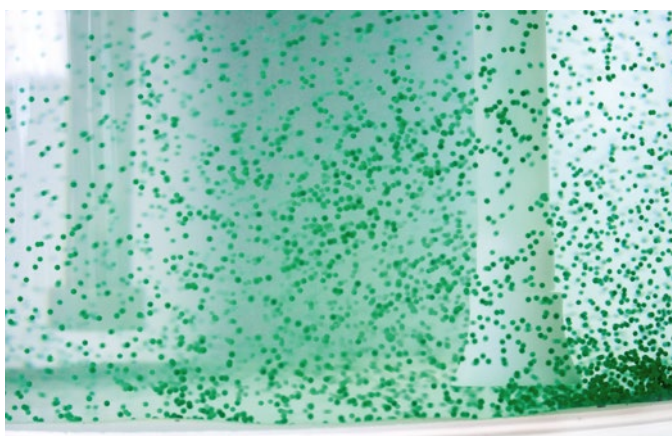
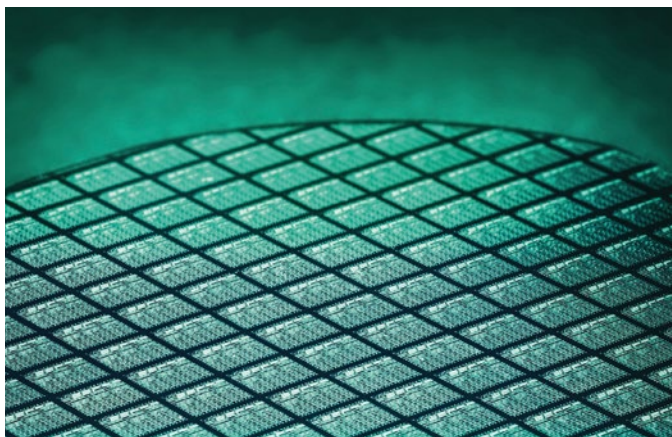


30 years of experience
in the semiconductor
and solar industry

The clever, complete system for the semiconductor and solar industry. For better protection and more efficient processes.

The mixing and transferring of slurry chemicals presents unique challenges: slurries are abrasive, some mixtures are foaming and suspended particles tend to settle down during storage. Therefore, in most cases, CMP chemicals need to be recirculated in the drum and eventually prefiltered to remove bigger sized aggregates (e.g. fumed silica) before they are transferred into a day-tank and supplied to the CMP tools.

AS offers a variety of solutions to handle the most challenging slurries.



**High-purity plastics.
No metal parts. 100,000 variants.**

The right solution for every application – for dispensing and filling with just one head and a dip tube (QC3) just like in the classic variant (QC2) which has been tried and tested a thousand times over – always protected by a key-code and spill-free.

**Smart:
with RFID-CHIP!**

**Chemicals mixed up?
Container lifetime
expired? Forget it!**

**The first i4.0 solution
for container handling:**

**SUPPLY[®]
LINE[»]**
connect. control. perform.



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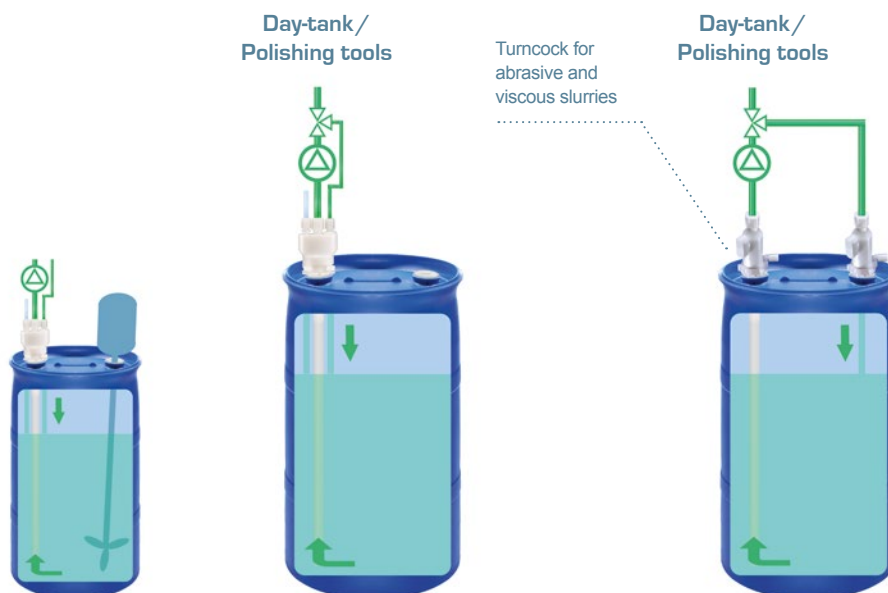


For chemical recirculation in the container: With various options

CMP chemicals need to be recirculated in the container before they are pumped into the day-tank or to the polishing tools, so that the suspensions get homogeneously mixed. The chemicals can be returned/filled back into the drum using a QC2 Fill Head through the second drum opening or by our QC3 Dispense Heads with incorporated filling and dispensing. In that case, the second drum opening can be equipped with a mechanical stirrer (e.g. for slurries with Al₂O₃ particles).

■ Homogenous mixing with QC3 and QC2

Mechanical stirrer in 2nd opening
(e.g. for slurries with Al₂O₃ particles).



■ Complete emptying

Customised AS QC Dip Tubes with bellows.

Benefits:

- Best possible complete drainage (see table)
- Adapted to various lengths and threads, they ensure virtually complete drainage even from large containers



Example remaining quantities:

Schütz MX1000 tote	up to 1.8 l
Rikutek UC 1000 tote	up to 2.4 l
Varibox 1000 FC tote	up to 0.7 l
Müller combi drum	up to 0.6 l
Entegris 200 l drum (Asia)	up to 0.6 l

■ Suitable for all containers

For 5 to 1000 liter container and packaging systems.

Benefits:

- QC is the right solution for tote, pure plastic drums or metal/plastic combination drums, for every connecting thread (metric or buttress thread), for dome covers or for IBC top ends. And it can empty every format more efficiently than you've ever seen before.



For abrasive & viscous slurries: With sophisticated solutions

For slurries that are abrasive and viscous, our Dispense Heads with an incorporated turncock valve offer the optimal solution. Allowing a free throughflow and thus preventing the aggregation of dry particles on the surface.

■ Dispense Heads with incorporated turncock valves

QC2 and QC3 Dispense Heads with turncock valve:
for higher flow rates and drip free connections.

Benefits:

- Free throughflow for viscous chemicals
- For abrasive CMP
- Elimination of check valve means no crystallization or particle build up

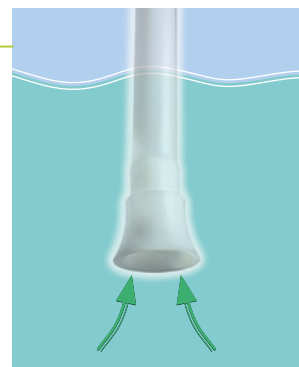


■ Dip Tubes with suction cone

The streamlined design of the suction cone allows an optimal suction.

Benefits:

- Easier suction of viscous chemicals
- Improved flow rates



■ Faster with high-flow version: G-Series

Inspired by the proven QC2 Version, the G-Series Dispense Heads and Dip Tubes with their bigger design allow even higher flow rates.

Benefits:

- Highly efficient dispensing and filling
- Up to 100 l/min (with incorporated check-valve)
- Up to 150 l/min (with ball valve)
- Reduced shear stress by wide orifice

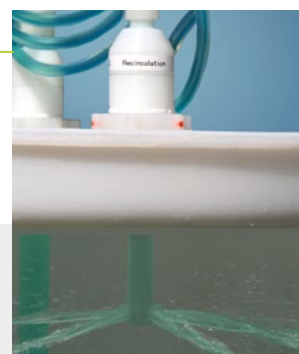


■ Filling Heads with mixing nozzle

Special recirculation heads with mixing nozzles make mixing easier.

Benefits:

- Optimum mixing results in the shortest time possible
- No additional mechanical stirrers required
- No moving parts – no generation of particles



For foaming slurries:

With chemical filling underneath the chemical surface

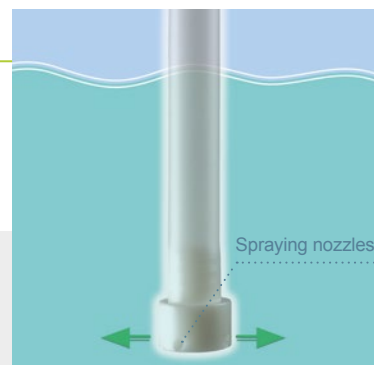
Many slurries contain additives like surfactants to stabilize the suspension of the particles. These tend to foam when they are stirred or filled back into the container. We offer special solutions for all types of slurries.

■ QC2 Dip Tube with spraying nozzle

Recirculation underneath the liquid surface and optimal distribution inside the container.

Benefits:

- Effective mixing without foaming
- Optimal space arrangement inside the container (distances, lengths)
- Customised spray nozzles

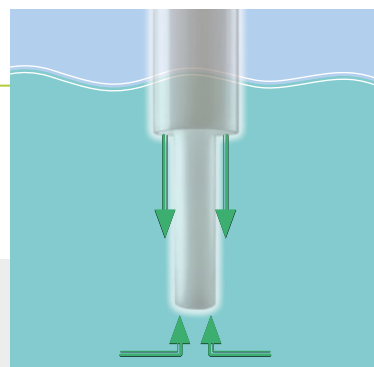


■ QC3 Dip Tube with outer tube for chemical return

For recirculation of foaming chemicals.

Benefits:

- Effective mixing without foaming.
- Lengths of the outer tube optimized to slurry type



For highly settling slurries:

Solutions to manage difficult suspensions

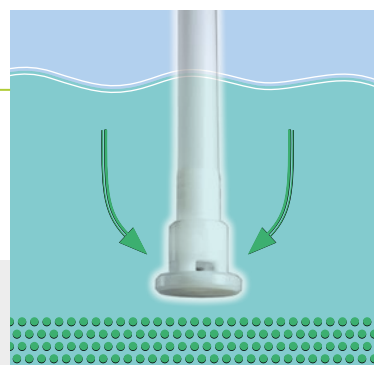
In the 7nm manufacturing technology, many different polishing processes are required. Therefore, various CMP mixtures have been developed to achieve high selectivity. The extremely fine structures need to be protected from scratches and damage by aggregated, larger particles.

■ Dip Tube with bottom-plate

Suction height above settled particle-aggregates in container.

Benefits:

- Prevents the intake of settled particles
- Suction lift height customisable





QC from AS – a complete system with over
100,000 options.
Used by leading companies around the world.



The AS QC-System supplies chemical consumers from a wide range of industry sectors:

Electronics	Semiconductors Solar power & photovoltaics Flat-screen displays
Industry	Electroplating Chemistry Printing / Paper Water treatment Automotive / Mechanical engineering Adhesives Glass Agriculture

Pharmaceuticals / Biotechnology / Cosmetics / Foodstuffs

Laboratories / Research institutes / Institutes

QC – an AS Strömungstechnik GmbH system. Made in Germany.
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