

GEMÜ solutions for CMP slurry supply in the process area of semiconductor production

GEMÜ PC50 iComLine solutions for point-of-use applications with CMP slurry

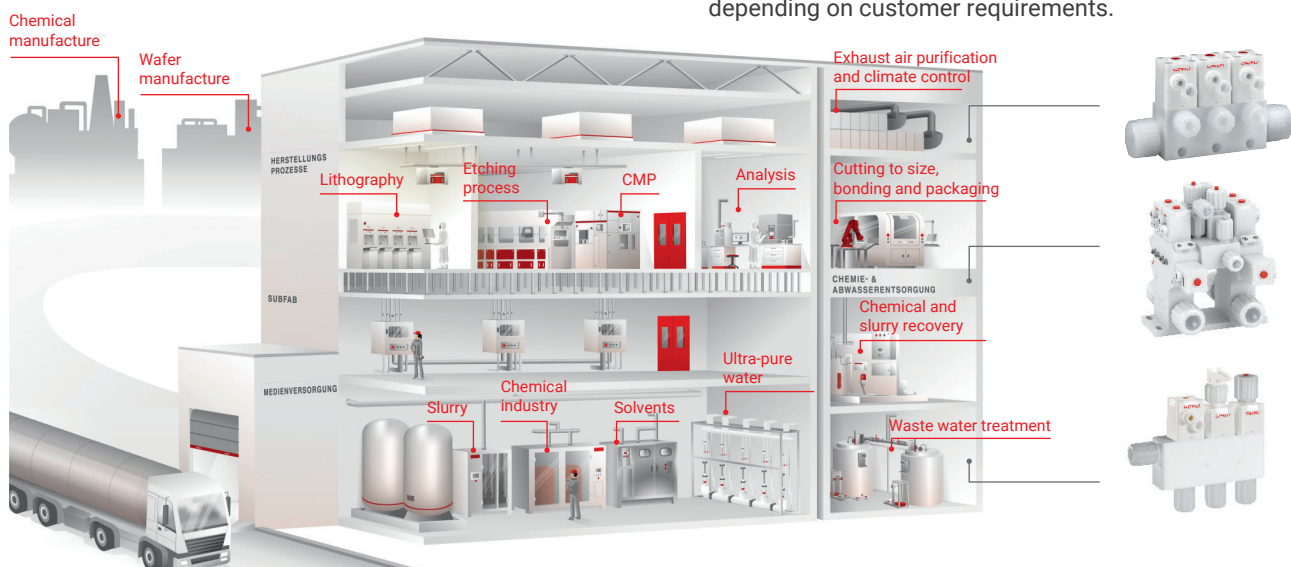
The individual manufacturing steps involved in the production of microchips, MEMS/sensors, as well as LED and TFT displays, etc. have a major influence on the microchips' performance at a later stage. In particular, the process of chemical-mechanical polishing (CMP) places particular challenges on the valves, measurement and control systems used.

The CMP process

Microelectronic switching circuits comprise conducting path structures applied in layers. Each layer needs to be smoothed before another layer can be applied. This is done using chemical-mechanical polishing (CMP). This process step is one of the functionally critical technologies in the manufacture of microelectronics and must be repeated up to 30 times for each component. The abrasive and viscous medium used in this process is called CMP slurry.

POU boxes

Upstream processes ensure that the CMP slurry arriving at the process tool is of the required quality. Point-of-use boxes, which are located directly below the process tool at an intermediate level, often carry out the final distribution to the actual place of use. These boxes need to be very compact and, despite the limited installation space, they must only cause a low level flow turbulence in the medium. The GEMÜ PC50 iComLine meets both of these requirements in the best possible way. In addition, a wide range of valves, measurement and control systems can be integrated, depending on customer requirements.



Process requirements

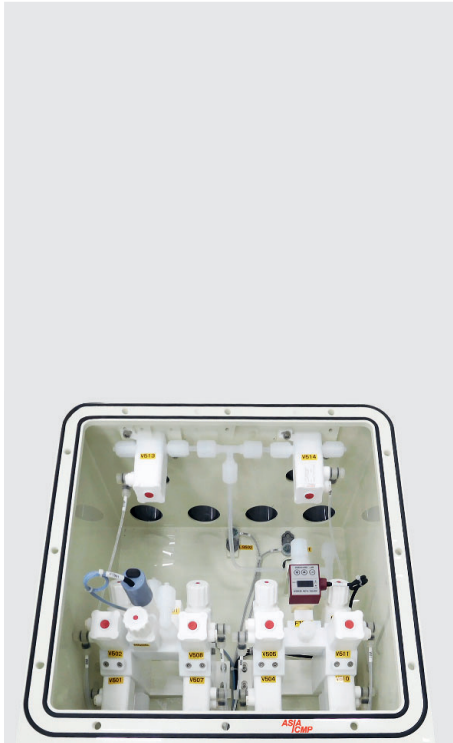
When it comes to supplying CMP slurry, flow turbulences in the supply loop may result in the agglomeration of slurries. To ensure that the particles are distributed homogeneously in the CMP slurry, the CMP tool filters are connected upstream to filter out the coarser particles. The flow-optimized design of the GEMÜ valve block means that there is comparatively low agglomeration of the medium. This leads to a longer filter service life, longer change intervals and, therefore, lower costs.

Suitable product range of GEMÜ PC50 iComLine multi-port valve blocks

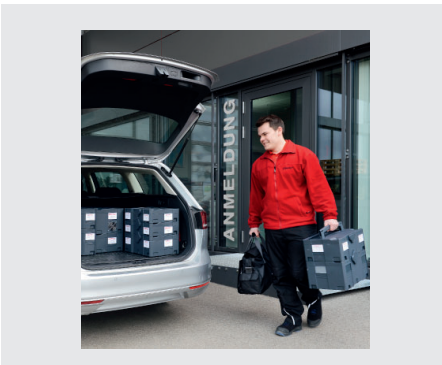
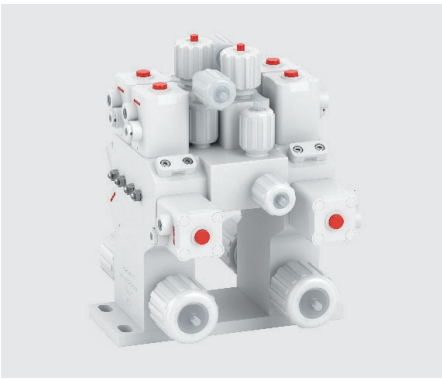
The advantage of the POU box mentioned is its compactness, which enables it to be integrated in the system's intermediate floors. This saves space in the cleanroom. Moreover, the agglomeration of medium can be prevented thanks to the block's flow-optimized design. Depending on the system geometry, various customized adaptations are possible.

Feature

Customer benefits



Open POU box



Customized design

- Optimal adaptation to the system geometry
- Wide range of connection sizes and types available
- Selection of actuator versions, pneumatic, motorized, manual

Integrated maintenance system

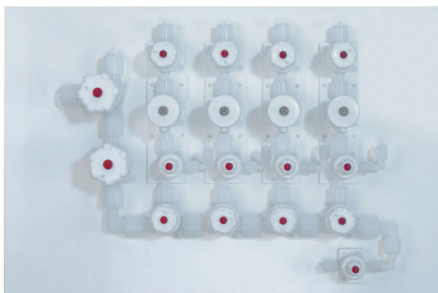
- System with a redundant structure
- The system can be serviced without interrupting the process
- Low system downtime



Integration of sensor system and measurement systems

- It is possible to integrate existing components
- Customized selection of valves, measurement and control systems
- Direct integration of pressure and temperature sensors
- Sampling points can be integrated

GEMÜ supply concepts for other semiconductor production areas



GEMÜ manifold configurations for the media line at the distribution level (subfab)



GEMÜ PC50 iComLine for distributing media in the process tool

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