

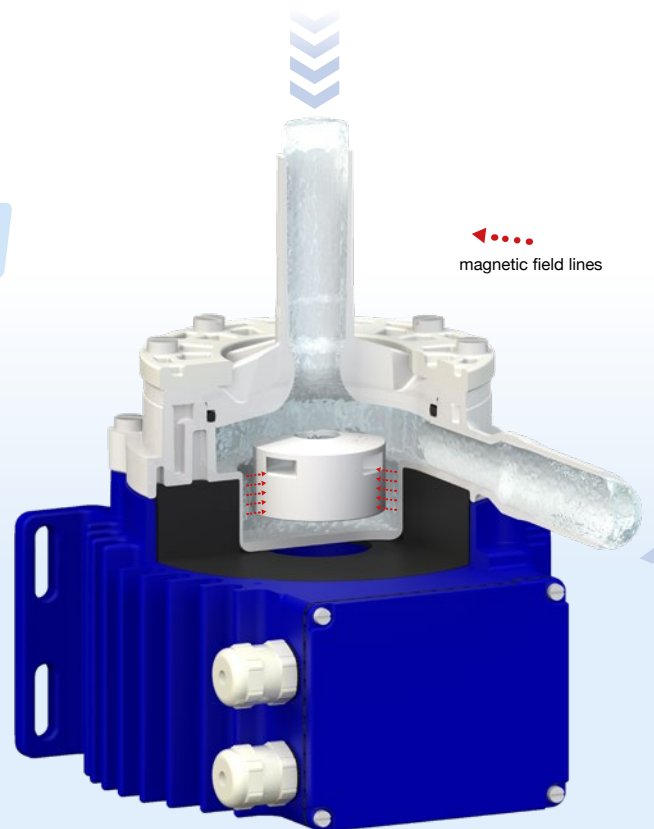
LEVITRONIX®
PUMP SYSTEMS

**REDUCED
SLURRY
AGGREGATION
IN CMP**



MEET THE INDUSTRY STANDARD

Chemical Mechanical Planarization (CMP) must continuously improve to meet the stringent requirements of next generation IC device manufacturing. The consistency of the slurry is essential to achieve high process repeatability and uniformity. Compared to Levitronix® pumps, pneumatic pumps can cause shear stress due to check valves and other components. Shear stress in pumps can cause slurry agglomeration. Agglomerated slurry particles can lead to micro scratches, which cause wafer defectivity in CMP. Furthermore, Slurry agglomerates result in quick filter clogging, leading to increased maintenance costs. Levitronix® pump systems are designed for demanding CMP applications where reduced particle agglomeration ensures the highest yield.



←... magnetic field lines

The magnetic levitation allows high rpm resulting in continuous, large flows.

ADVANTAGES OF A LEVITRONIX® PUMP SYSTEM

Test report available for various slurries including:
Cabot EP-C6618
Cabot iCue 600Y75
Cabot SiLECT 6000
Cabot Semi-Sperse 12
Cabot WIN W7300-A 18
Hitachi HS-8005-D4

Reduced Slurry Agglomeration // low shear pump principle

The magnetic levitation technology guarantees that no pump components contact one another, enabling the gentle processing of delicate slurries. The smooth wetted plastic surfaces and the absence of a mechanical bearing, narrow gaps, fissures, and dead-zones ensure the highest standards of slurry health during its lifecycle.

Small Footprint // substantially smaller than pneumatic pumps

The highly integrated design of the pump and motor combined with the absence of a mechanical bearing results in a system that significantly reduces the space requirements and allows for installation in confined spaces.

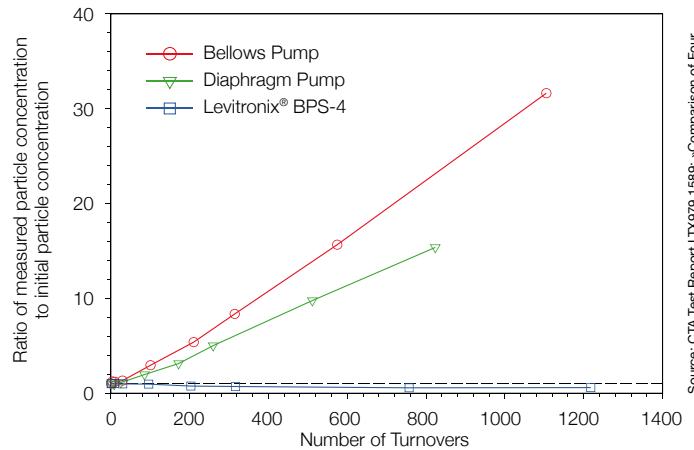
Increased Filter Lifetime // reduced clogging caused by slurry agglomerates

The lifetime of a CMP filter is directly linked with the concentration of large particles in the slurry. As the concentration of large particles of CMP slurry tends to increase in bellows and diaphragm pumps, the filter lifetime can be significantly prolonged with Levitronix® pumps.

Highest Reliability // MTBF >100 years

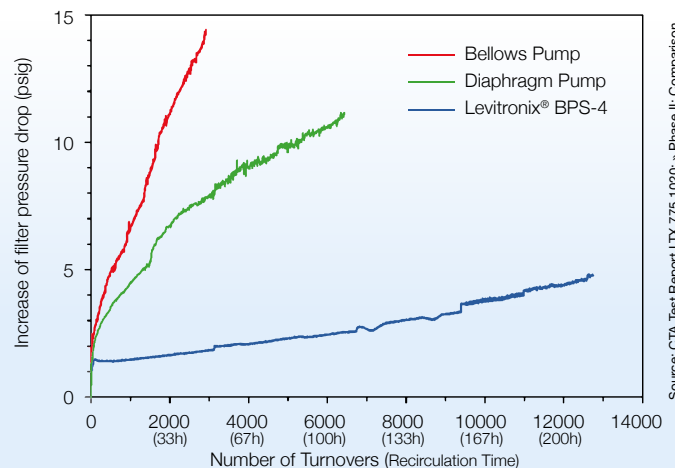
In pneumatic pumps, abrasive slurries can wear out and break down critical pump components such as diaphragms or check valves. The Levitronix® pump is based on active magnetic levitation with no bearings to wear out or seals to break down and fail, increasing the lifetime.

EFFECT OF DIFFERENT PUMPS ON PARTICLE CONCENTRATION (> 0.56 MM)

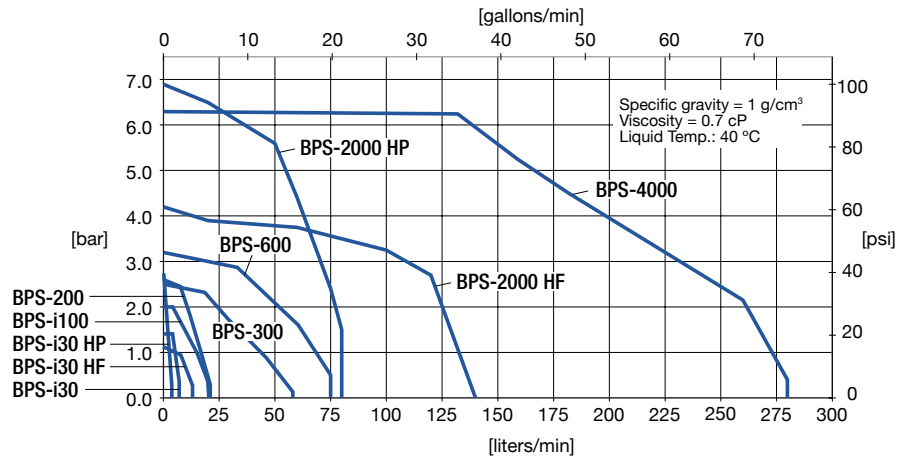


Source: CTA Test Report LTX979 1589 - Comparison of Four Pump Systems on the Particle Size Distribution of Slurry Cabot iCue 600Y75 Slurry, Mark Litchy, November 2006

INCREASE IN DIFFERENTIAL PRESSURE ACROSS FILTER OVER TIME FOR THREE DIFFERENT PUMPS



Source: CTA Test Report LTX 775 1026 - Phase II: Comparison of Filter Lifetime during Circulation of Cabot Semi-Sperse 12 Slurry with 3 Types of Pumps, Mark Litchy, September 2004



Overview // SU Pump Systems



BPS-i30 Standard
1.5 bar (22 psi)
7.4 l/min (2 gpm)

BPS-i30 High Pressure
2.8 bar (40 psi)
3.8 l/min (1 gpm)

BPS-i30 High Flow
1.1 bar (16 psi)
14.7 l/min (3.9 gpm)



BPS-i100
2 bar (29 psi)
20 l/min (5.3 gpm)



BPS-200
2.6 bar (37.7 psi)
21 l/min (5.5 gpm)



BPS-300
2.5 bar (36.2 psi)
58 l/min (15.3 gpm)



BPS-600
3.2 bar (46 psi)
75 l/min (20 gpm)



BPS-2000 High Pressure
6.9 bar (100 psi)
80 l/min (21 gpm)



BPS-2000 High Flow
4.2 bar (61 psi)
140 l/min (37 gpm)



BPS-4000
6.3 bar (91 psi)
280 l/min (74 gpm)



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