

Chemical Mechanical Planarization (CMP) slurry dispense systems may utilize gross filtration for filtering large agglomerations of particles, typically larger than 1 micron, that can, if unfiltered, scratch the wafer during polishing. A plugged, or loaded, filter decreases the downstream pressure and flow rate of slurry to the polishing system, which may lead to damaged wafers due to an inadequate supply of slurry.

Measuring the pressure difference across a filtration system can indicate the need for filter replacement as the pressure difference increases and flow rate decreases due to filter loading.

Pressure measurement allows CMP operators to optimize filter life, schedule the installation of replacement filters with minimal downtime and monitor inlet or outlet dispense pressures.

Figure 1 illustrates a typical filtration installation using pressure transducers and a local digital display to monitor pre-, post- and differential filter pressures.

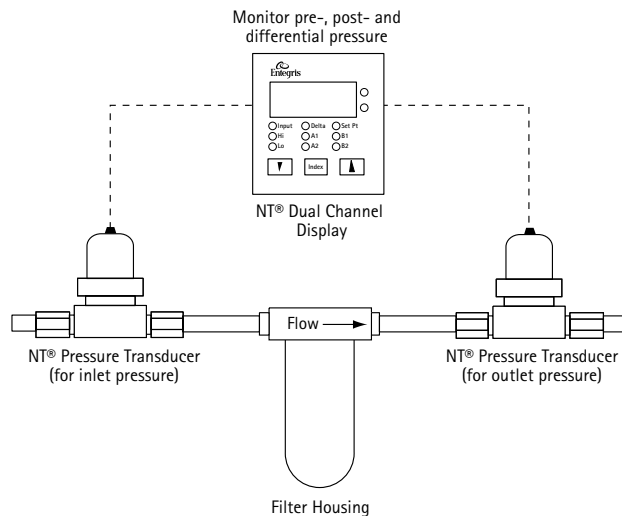


Figure 1. Using pressure transducers for pre-, post- and differential pressure measurement.

Figure 2 provides an example of monitoring filter loading and installing filter replacements by using differential pressure measurement.

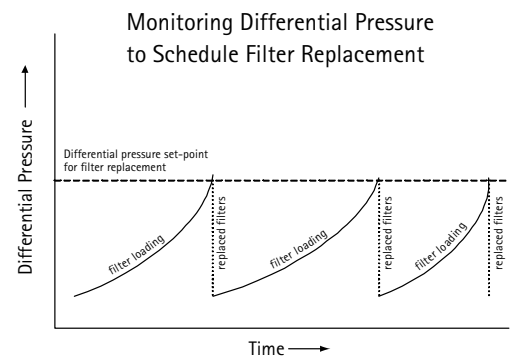


Figure 2. A generalized example of monitoring filter loading and scheduling filter replacement with differential pressure.

For CMP slurry applications, the pressure transducers must utilize a flow-through design to minimize any dead volume and reduce the possibility of slurry settling or forming agglomerations. To minimize the risk of contamination, the pressure transducers must not contain any fill fluids and must be constructed of chemically compatible and high purity materials, such as PTFE.

The NT® Flow-Through Pressure Transducer meets the requirements for CMP slurry applications with measurement capability up to 100 PSIG (690 kPa). The transducer provides a continuous electronic signal (i.e., 4-20 mA, 0-5 VDC, or 0-10 VDC) allowing easy integration with PLCs, control systems or local digital displays, such as the NT® Dual Channel Display.

Measuring the flow rate of slurry ensures that an adequate supply of slurry is reaching the polishing operation. Process improvements may also be achieved by optimizing the flow of slurry, other process chemicals and deionized water.

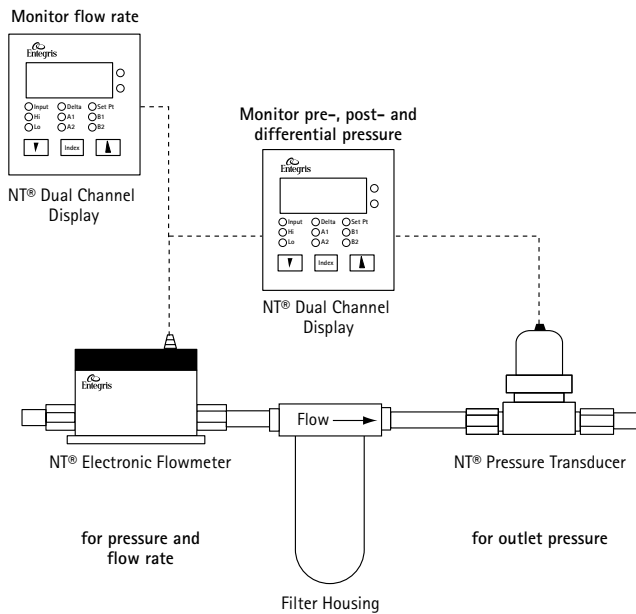


Figure 3. NT® Electronic Flowmeter with simultaneous flow and pressure output signals.

Figure 3 demonstrates the use of the NT® Electronic Flowmeter to simultaneously measure the flow rate and inlet pressure of the filtration system.

The NT® Dual Channel Display is a two-channel panel-mounted display, which may be used with the NT® Electronic Flowmeter to display both flow rate and pressure. The display is designed to compute and display the difference between pre-and post-filter pressure.

## Featured Products

**NT® Flow-Through Pressure Transducer** to measure pressure.

**NT® Electronic Flowmeter** to simultaneously measure flow and pressure.

**NT® Dual Channel Display** is a panel-mounted digital display to monitor the pre-, post- and differential pressure of a filtration system. Also used to monitor the flow and pressure output signals from the flowmeter.

Entegris designs and manufactures measurement instruments for the high purity and corrosive chemical environments of the semiconductor industry. Our products measure flow, pressure and level for the various acids, caustics, solvents and slurries used in the industry.

## For More Information

For more information on CMP filtration products or our complete line of fluoropolymer fluid handling solutions, contact your local Entegris distributor or Entegris, Inc.

To review our complete line of sensing and control product solutions visit Entegris' Web site at [www.entegrisfluidhandling.com](http://www.entegrisfluidhandling.com) or contact Entegris Customer Service.

Entegris® is a registered trademark of Entegris, Inc.  
 NT® is a registered trademark of NT International, an Entegris company.  
 Teflon® is a registered trademark of E.I. du Pont de Nemours and Company used under license.

### ENTEGRIS, INC.

Corporate Headquarters / 3500 Lyman Boulevard / Chaska, Minnesota 55318 USA  
 Customer Service Tel. 763-502-0200 or Toll Free 877-503-0200 / Customer Service Fax 763-502-0300  
[www.entegris.com](http://www.entegris.com) / [www.entegrisfluidhandling.com](http://www.entegrisfluidhandling.com)

The materials integrity management company

©2004 Entegris, Inc. Printed in USA 3960-1600MAX-0204