



# Increase Ink Jet Print Speeds by 15% with 3M™ Liqui-Cel™ SP Series Membrane Contactors

Many high-speed, wide-format ink jet printer manufacturers are now using 3M™ Liqui-Cel™ SP Series Membrane Contactors to remove air bubbles and excess gases from ink to reduce downtime and improve yields. Entrained bubbles and excess gases are often the cause of printing surface defects and ink flow interruptions that can cause printer shut-downs.

Manufacturers report that by degassing ink before it enters the print head, printer line speeds improve by up to 15%. Debubbling the ink also promotes smooth printer operation and high quality output at faster speeds.

3M has developed several small Liqui-Cel membrane contactors designed specifically for ink debubbling. These membrane contactors utilize a unique nonporous membrane that is gas permeable. Ink is pumped across one side of the membrane while a vacuum is applied to the other side. Dissolved gases and bubbles freely move to the vacuum side of the membrane, producing bubble-free inks.

A small diaphragm vacuum pump is typically used as the vacuum source for the printer. The typical vacuum and vacuum load for each size and ink type is listed below:

Size	Ink Flow (ml/min)	Vacuum Load (ml/min)
0.5 x 1	5-30	3-9 @ 100 mbar
1 x 3	15-60	12-22 @ 100 mbar
2 x 6	100-1000	85-220 @ 100 mbar

Ink Type	Typical Vacuum (mbar abs.)
Aqueous	100-150
UV	150-200
Solvent	100-200



3M™ Liqui-Cel™ SP-0.5x1 Series Membrane Contactors installed on a wide format ink jet printer



3M™ Liqui-Cel™ SP-1x3 Series Membrane Contactors installed on a wide format ink jet printer.

Ink packagers can also utilize 3M™ Liqui-Cel™ SP Series Membrane Contactor technology to degas ink prior to packaging and/or bottling to reduce foaming, which can slow packaging speeds and negatively impact filling volumes. Bubbles in the ink can also interfere with quality testing and negatively impact readings.

3M has been manufacturing membrane contactors for over 20 years and is recognized as a leader in membrane degassing technology.

For more information on ink debubbling, please contact your 3M representative or visit [3M.com/Liqui-Cel](http://3M.com/Liqui-Cel).

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