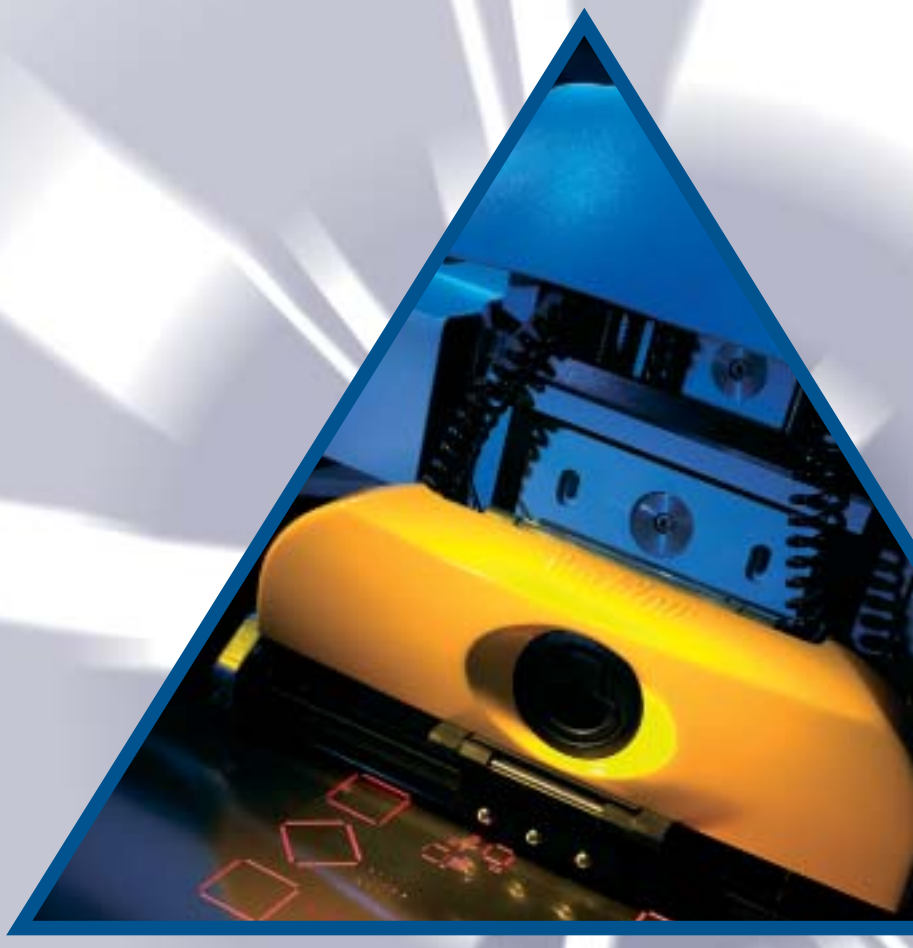
DEK®



ProFlow®

PROFLOW®

Since we introduced ProFlow® DirEKt Imaging in 1997, hundreds of electronics manufacturers around the world have migrated from squeegees to enclosed printhead technology – and discovered convincing cost savings and process benefits. Not only does DirEKt Imaging dramatically improve the efficiency of the surface mount pre-placement process, it also delivers environmental benefits and exceptional ease-of-use for operators.

Over 1000 individual ProFlow systems have been installed by DEK customers in all corners of the globe, representing around 80% of all enclosed printheads currently in action world-wide.

The ProFlow product range includes new and exciting options to satisfy a wide variety of process and production requirements.

Discover how ProFlow DirEKt Imaging delivers a more cost-effective process, offering enhanced throughput, higher yield, consumables savings and improved efficiency.

PROFLOW OPTIONS; CONFIGURE AND OPTIMISE

We have meticulously developed and expanded the ProFlow range to enable highly-flexible, well-optimised solutions for many process requirements.

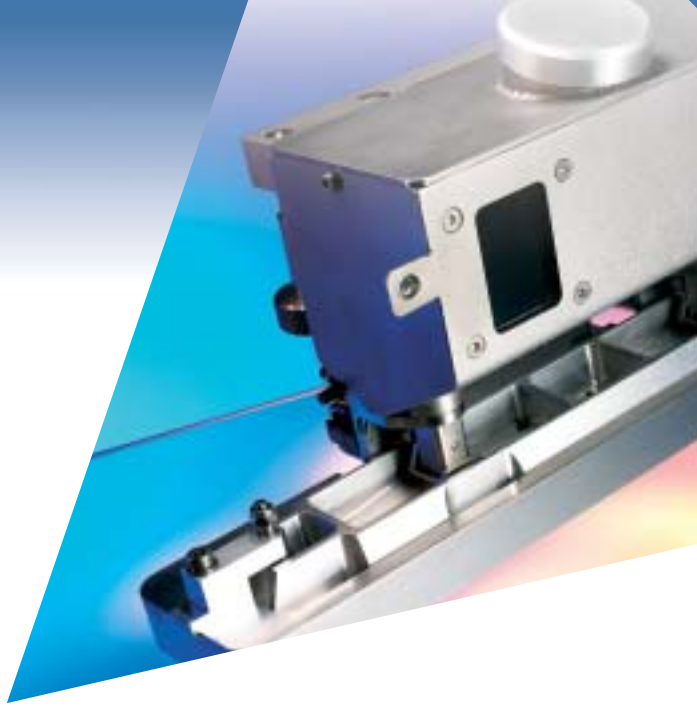
• Choice of print width

The ProFlow head is available in sizes from 150mm to 500mm. Cassette type heads are 300mm, 350mm and 400mm. Rechargeable heads are available in sizes of 150mm, 300mm, 350mm, 400mm, 450mm and 500mm. ProFlow Integrated Thermal Control (ITC) is available in 300mm size only.

• Cassette or Rechargeable Transfer Heads

Paste replenishment is quick and simple by replacing the 800 gram paste cassette when requested by the paste low indicator. The operation is completed in less than 2 minutes. All major solder paste suppliers support the ProFlow paste cassette format, offering a range of optimised paste types.

The rechargeable ProFlow head can be refilled using the pneumatic paste gun. The result is even greater paste savings, especially where high-value paste types or special formulations are used. The rechargeable design also enables a wider range of print widths.



• Wipers to match your stencil and process

Wipers help seal the ProFlow transfer head against the stencil surface and form part of the paste retention mechanism. Selection is critical to process optimisation and DEK offers a range of wiper styles and materials including mylar wipers for use with delicate plastic stencils and emulsion screens. For optimum results with metal stencils choose titanium wipers. Two types are available - 300 micron uniform thickness to enhance the gasket seal between stencil and board, or a stepped profile combining 300 micron rigidity at the contact edge to prevent scooping, with a flexible 200 micron area to maintain wiper pressure and contact with the stencil surface.

• Dual Chamber Transfer Head

To deposit high paste volumes at line speed, the dual chamber ProFlow head delivers optimally conditioned paste for processes such as pin-in-paste or PumpPrinting™. Step and repeat patterns or large components such as heatsinks or RF shields also require a large volume of solder and this can now be delivered as part of an automated, ProFlow-based process using the new head design.

Dual chamber variants are compatible with all DEK printing platforms capable of accepting the standard ProFlow head.

• Software controlled paste pressure

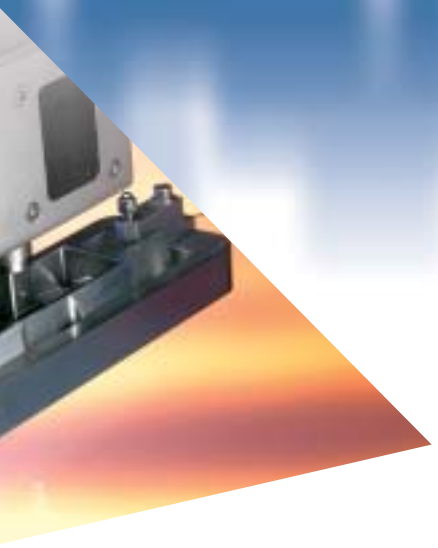
The SCAR (Software Controlled Air Regulator) option allows paste pressure to be set via the product file or directly using the machine front control panel, reducing manual intervention. The result is a significant time saving, combined with enhanced process control and repeatability.

SCAR is standard equipment on Infinity machines and optional on Horizon.

• Integrated Thermal Control

ProFlow ITC enhances material stability leading directly to tighter process control. It also enables new applications such as screen printing of polymer thick film inks by maintaining the solder paste, adhesive, ink or other material at a constant, user-defined temperature within the range 15^{o}C to 30^{o}C.

ProFlow®



BENEFIT-DRIVEN FEATURE SET

DirEKt Imaging takes a dynamic new approach to the application of solder paste for pre-placement SMT. The transfer head accepts either a quick change cassette or injected paste (rechargeable head option).

The ProFlow assembly is locked to the printing machine using two dowel pins vertically aligned on horizontal axes. These simplify head changeovers and enhance rigidity during printing. The alternative vertical mounting, offered since the launch of ProFlow in 1997, continues to be supported, and the dual chamber head is available in both versions.

The system pressure keeps the ProFlow transfer head assembly sealed against the stencil at all times, enhancing the gasket seal between the board and stencil. At the stencil surface, paste is retained across the width of the head by titanium or mylar wipers, and at the edges by flexible silicon skis with a low friction vulcanised PTFE coating. The skis are resistant to cleaning solvents and mechanical wear for maximum performance and durability.

The paste transfer pressure is independent of the system pressure, and is applied pneumatically irrespective of print speed. When the paste level in the reservoir reaches a preset lower limit, the paste low sensor indicates recharging is necessary. The new paste level sensor design now means you can consistently reduce paste wastage to as low as 4% of an 800 gram cassette.

The ProFlow pressure mechanism hinges away from the head assembly to allow easy access when replacing the paste cassette, without requiring removal of the head.

CONVINCING PERFORMANCE IN REAL PROCESSES

The cycle time savings shown overleaf are actual results recorded by a ProFlow user who set out to survey the performance of DirEKt Imaging relative to printing with squeegees.

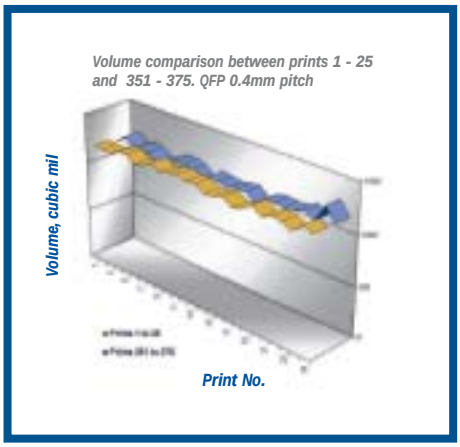
Migrating to ProFlow clearly enables dramatic throughput improvements. The significantly shorter print excursion time is the direct benefit of isolating paste transfer pressure from system pressure.

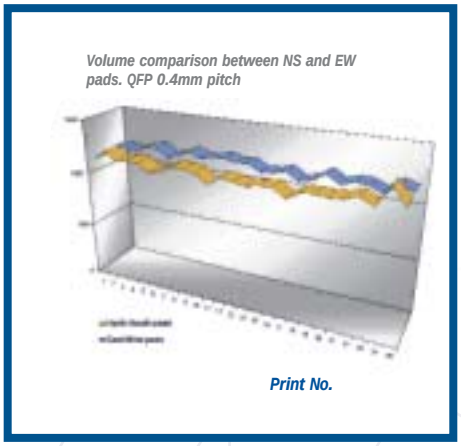
Cleaning operations and machine stoppages are reduced because the paste retention mechanism and independent system pressure eliminate tramlining on the stencil surface and paste bleeding between the stencil and the board. This also maintains the paste in optimum condition, delivering a consistent quality material for outstanding process control.

	ProFlow	Squeegee
Core cycle time	8s	8s
Print excursion time	2.5s	10.0s
Separation time	1.0s	1.0s
Cleaning overhead (1 every 50 prints)	2.25s	5.6s
Paste addition	0.0s	1.0s
Paste maintenance	0.0s	1.25s
Total per PCB	14.75s	26.85s
PCBs per hour	**244PCBs**	**134PCBs**

Further results from live production processes underline the repeatability and robustness of DirEKt Imaging using ProFlow. Comparison of deposited paste volume when printing through east-west or north-south apertures, and testing separate batches at various points throughout a shift, demonstrate impressive consistency.

Finally, if you want to see the savings your competitors are achieving by using ProFlow DirEKt Imaging, consider this comparison between paste discarded from production lines operating in the same facility over a four week period. Then imagine how much you could be saving, in addition to improvements in process control, throughput and product quality.





Convinced? Why not call DEK to find out more and arrange a demonstration.

DEK Printing Machines Limited
Tel: +44 1305 760760

DEK USA Inc
Tel: +1 908 782 4140

DEK Printing Machines GmbH
Tel: +49 6101 5227-0

DEK France, Sarl
Tel: +33 1 47 92 18 76

DEK Benelux
Tel: +31 40 2350788

DEK Central Europe (Hungary)
Tel: +36 96 506960

DEK International GmbH
Tel: +41 1 274 80 20

DEK Asia Pacific (Pte) Ltd
Tel: +65 484 7010

DEK Printing Machines Taiwan Branch
Tel: +886 2 27394266

DEK Japan Ltd
Tel: +81 489 50 3750

DEK Printing Machines Shanghai Rep. Office
Tel: +86 21 53830200

Excellence in Electronic Packaging and Production Awards 1998

GlobalTRONICS 98
EBA Technology Showcase Grand Award
ProFlow DirEKt Imaging System

NOVAEC
ProFlow developed from a concept by novaetec-eap

DEK®

...measure the difference

www.dek.com

21/01/02