



Horizon Printing Platform



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***More Choice and Value for a Future Proof
Productivity Advantage***

Distributor Information



*Knowhow... Know DEK
...Know the Difference*

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Horizon from DEK

Extreme modularity lets you go as far as you need, and further when you want.

The DEK Horizon platform offers you absolute freedom of choice to configure your screen printer exactly the way you need it. You start with an impressive array of features as standard then, to optimise performance and value, you choose from an extensive range of options.

Options that offer speed improvements, enhanced yields, intelligent board support and comprehensive service plans. These let you precisely match your Horizon to your process needs and budget. Then we give you more choice that future-proofs your investment. Any options you don't need for today's production, you can add tomorrow to enhance yield and throughput, and to extend the life of your Horizon to deliver the lowest cost of ownership. The result is value-driven performance from a technology leader.

Untouchable Productivity as Standard

The Horizon platform takes the pressure of modern production in its stride – from low-volume, specialist projects to high-speed, high-volume assembly – delivering maximum productivity through fast and faultless performance all the way.

All Horizon platforms benefit from DEK's robust chassis technology, featuring vibration tested one-piece construction for exceptional rigidity and mechanical integrity, which is the foundation of the Industry Gold Standard 6-Sigma machine alignment capability of 2cpk @ +/-12.5 microns.

In addition, every Horizon incorporates DEK's Instinctiv™ V9 next-generation touch-screen user interface as standard. Instinctiv V9 presents graphical, menu-based controls for easy, error-free operation and is the powerhouse behind an extensive array of Productivity Tool options designed to enhance throughput and yield. Instinctiv V9 now features expanded language support which includes Chinese, Korean, Japanese, Czech, French, German, and English.



Frameless VectorGuard® Stencil Foil



ProFlow® enclosed print head technology



ISO9000-accredited manufacturing sites



Cyclone Understencil Cleaner

“ ROBUST CHASSIS TECHNOLOGY IS THE FOUNDATION OF MACHINE ALIGNMENT ACCURACY 2CPK @ +/-12.5 MICRONS 6-SIGMA ”



Far-reaching *Knowhow*

No other printer manufacturer comes close to matching DEK's process knowledge and applications expertise. Our global technology leadership means we know how to help you optimise your performance to deliver exceptionally low cost of ownership and maximum investment value. And no-one offers such a comprehensive print process solution that includes superior technologies, board support tooling, screen and stencil manufacturing *knowhow* and Process Improvement Products. Award-winning innovations like frameless VectorGuard® stencil foils, Cyclone understencil cleaner and ProFlow® enclosed print head technologies keep DEK at the industry's pioneering forefront. That's an imperative advantage for progressive manufacturers, and one that adds value far beyond the platform performance by maximising utilisation, yield and productivity.



Excellence in Manufacturing

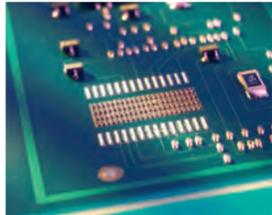
All DEK screen printers are designed and built in our modern, efficient, ISO9000-accredited manufacturing sites in the UK and Asia, augmented by a worldwide network of screens and stencil production hubs supported by a Class 10,000 clean room.

As a pioneer of lean manufacturing in the advanced capital equipment sector, we've shown just how much more DEK customers can expect from their equipment and their screen printing partner: greater responsiveness, shorter lead times, hassle-free custom requirements, unparalleled expertise, consistent reliability, wide-ranging process capability, a drive for continuous improvement, a commitment to the industry's lowest cost of ownership and ultimately the most choice, best value and greatest return on investment.

When we say Process Capability...

Don't be misled... all Cpk figures quoted for DEK printers, which are statistical measures of process capability that relate to accuracy and repeatability, are always referenced to the full print process capability. With other vendors you may find this is not the case.

Many quote for first-alignment capability only – it's a more favourable figure for the datasheet, but one that won't give you a true picture in real factory floor production.



DEK Class 10,000 clean room

“ DEK CUSTOMERS CAN EXPECT MORE FROM THEIR EQUIPMENT AND THEIR SCREEN PRINTING PARTNER. ”

Getting the most from your Horizon platform is effortless

To get exactly what you need, you must have choice. And choice is at the core of the flexible Horizon platform.

Opting for Horizon is an easy choice. The flexibility and rapid changeover capabilities of the platform are perfect for a diverse and detailed range of assembly challenges, from fast turn prototyping and short production runs to volume manufacturing at high speed. Its versatility enables easy re-deployment to handle a variety of substrate materials including PCBs, glass, ceramics and green tape. As for assembly technologies, Horizon is equally at home printing ultra fine pitch 0201 and CSP patterns or pin-in-paste features for intrusive reflow as it is mass imaging conventional package pinouts.

The key to getting the most from Horizon is choosing the specification and options that deliver the productivity you want – and we've made that an easy choice too. Because Horizon is a future proof platform, tomorrow takes care of itself. Simply specify the facilities you need today from an extensive range of productivity tools. Then throughput and yield enhancing options can be field retrofitted whenever you need to increase productivity.



“ TO GET EXACTLY WHAT YOU NEED, YOU MUST HAVE CHOICE. ”



Outstanding performance from the outset

Take the base Horizon platform configuration with no added options and you already get exceptional performance and value, whichever way you measure it. Standard fit resources deliver a level of precision that guarantees Industry Gold Standard 6-Sigma performance on every Horizon printer of 2 Cpk machine alignment capability @ +/-12.5 microns, and 2 Cpk process alignment capability @ +/-25 microns or better.

All Horizons are powered by DEK's award-winning Instinctiv™ V9 user interface giving you easy and familiar operation to get productive fast. Since Horizon delivers cycle time options ranging from twelve seconds to seven seconds, Instinctiv V9 expertly supports these capabilities, serving as the powerhouse at the core of your platform. That means you can integrate any or all of the productivity tools you select to immediately increase throughput or yield. Or both.

We know that time is money because time is a key component of productivity. That's why Horizon's time-critical standard features include an initial setup time of less than ten minutes, so you can get productive fast and deliver output that really counts at the end of a shift or production run. Changeover to a new product coming on stream is even faster; it takes less than two minutes to cease one production run, upload a new program, change the stencil, replenish consumables and start manufacturing a different product. That's perfect for high mix environments and is essential in

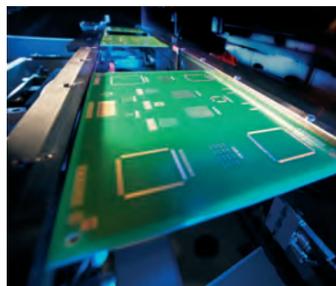
maximising equipment utilisation that translates directly to productivity and value of ownership.

Once you're up and running, a base Horizon 03iX configuration delivers a minimum core cycle time of just twelve seconds. Features included as standard are full size stencil frame capability of 29 x 29 inches, an active printing area of 20 x 20 inches, a tooling table ready to accept board support options, and a flat-panel touch screen interface. All these facilities are integrated by a robust bus-based Intelligent Scalable Control Area Network (ISCAN) for reliable and responsive machine control.



Just two up-front productivity decisions

The key components of profitability in pre-placement screen printing are throughput and yield. With Horizon, there are only two factor y dependent options to consider up front that can impact your productivity potential. Everything else can be field retrofitted in the future when you need more performance.



High Throughput Conveyor (HTC)

DEK's High Throughput Conveyor (HTC) is an advanced transport system that drives one board into the print area while moving the printed board downstream as a simultaneous operation to maximise throughput and knock a second off the core cycle time.

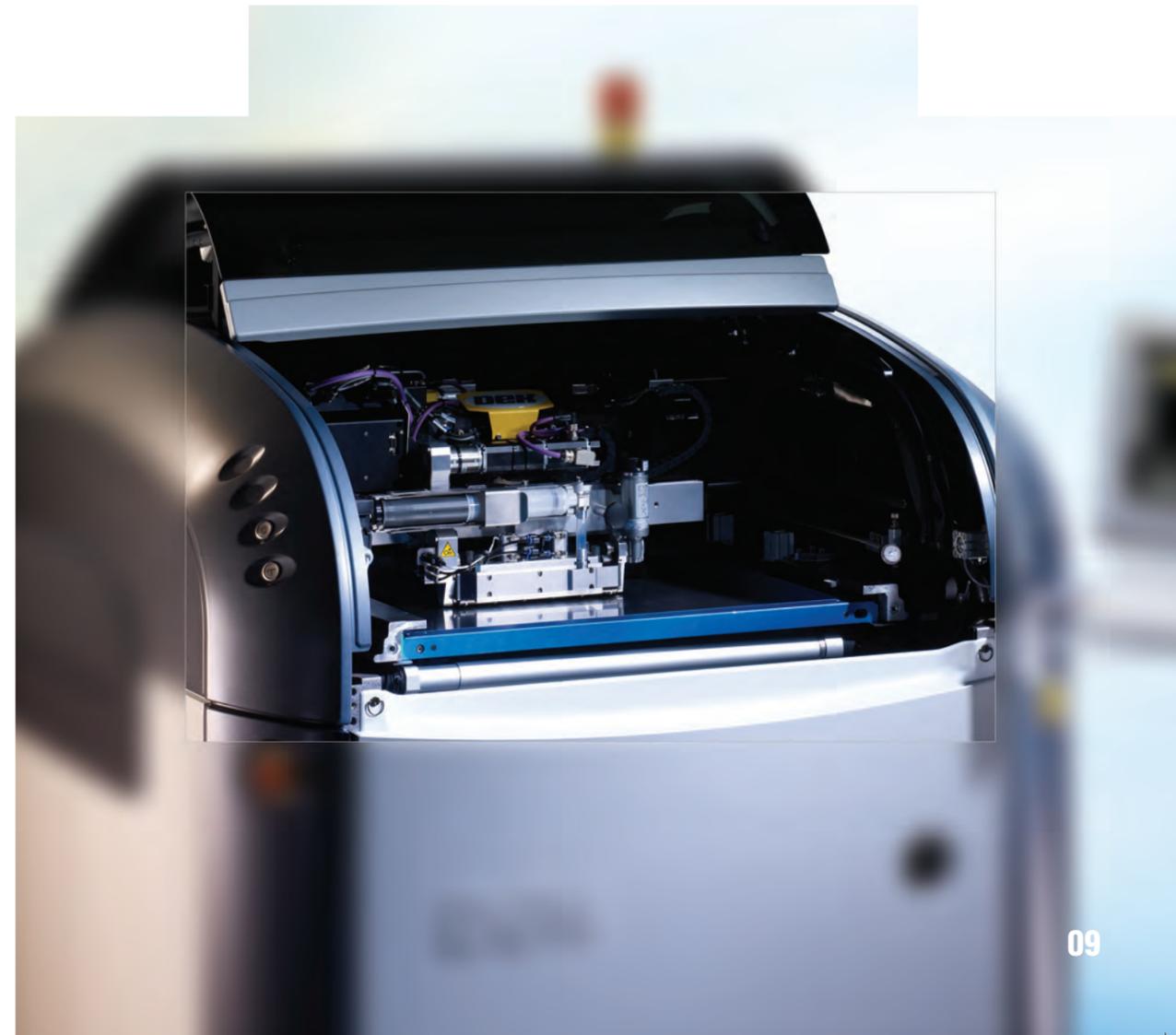
Horizon features a Fixed Chase as standard, equipped to accept a limited number of regular frame sizes. You can use adaptors for other sizes of stencils frames but a better way is to choose the Adjustable Stencil Mount option. Adjustable Stencil Mount is a highly flexible means of securing the stencil into the Horizon platform, and especially assists with productivity in high mix assembly environments that feature frequent product changeovers.

“ HORIZON'S VERSATILITY SETS PRODUCTIVITY STANDARDS FROM PROTOTYPING TO HIGH-VOLUME ASSEMBLY. ”

How fast do you want to go?

Some of the Horizon platform's Productivity Tool options are designed purely for speed. Not only is throughput a key component of productivity , it has a significant bearing on overall cost of ownership: the faster you can go, the more output you can deliver, and the greater the financial return on your equipment investment.

Horizon offers two Speed-Up Module options to boost throughput, giving you the power to harness more performance at an incremental cost, exactly when you want it.



Speed is nothing without control

Control is a byword for Horizon performance. With 2.0 Cpk production performance and 6-Sigma alignment capability of +/-12.5 microns at machine level and +/-25 microns or better for process alignment capability you get control even at full seven-second core cycle times and can expect excellent yields. But there are many variables in the print process that need to stay in control. If any of these drift, yield suffers – which is why speed is nothing without control. It’s also why a raft of Horizon Productivity Tool options focus expressly on enhancing yields, to translate the platform’s repeatable accuracy and speed potential into maximum productive output.

The first steps for yield improvement lie with vision systems. Horizon offers a number of incremental enhanced camera options for alignment, detailed inspection and rapid post-print verification.

Inspection improves yield by keeping your process in control. DEK camera options offer advanced lighting with a wider field of view, allowing you to capture more vision data in one process operation. That means you can choose to increase throughput by inspecting faster or perform more inspection tasks without impacting your current throughput. Either way it adds up to greater productivity.

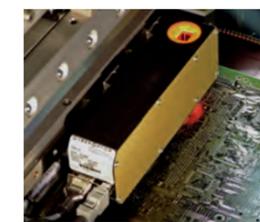
Taking inspection a stage further reveals DEK’s award-winning HawkEye® post-print verification options – fast and powerful vision tools designed to inspect every board passing through your Horizon at the line beat rate. Here again you have a choice: select HawkEye® 750 for post-print paste-on-pad inspection of critical board areas. Or choose HawkEye® 1700 to get four-times the field of view, which lets you inspect more of the board for absolute print quality certainty at full speed, which maximises yield with no throughput penalty.



Instinctiv™ V9 2D Inspection



Instinctiv V9 User Interface

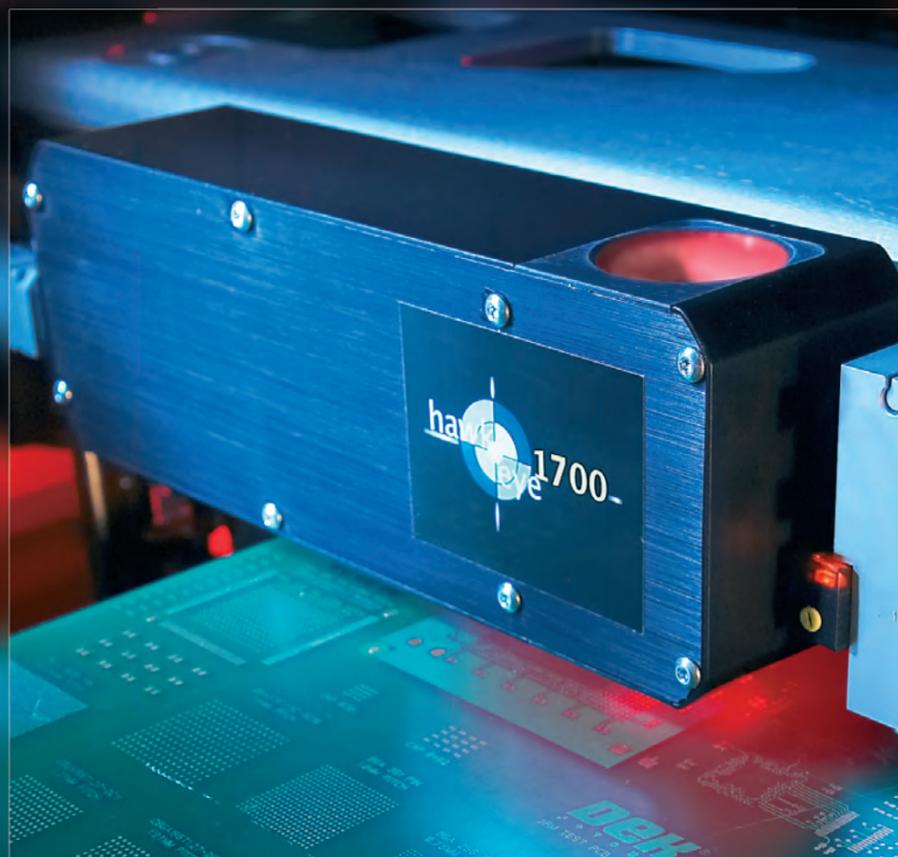


DEK camera

“ HORIZON PRODUCTIVITY TOOLS TRANSLATE REPEATABLE ACCURACY AND SPEED POTENTIAL INTO MAXIMUM PRODUCTIVE OUTPUT. ”

Top of the tree in yield-enhancing inspection tools is DEK’s advanced 2Di solution. 2Di optimises cycle time and print quality even further. Its detailed scrutiny, coupled with trend analysis functions, prevents your process moving out of control. This safeguards yields and eliminates potential stoppages by highlighting the need for stencil cleaning or paste replenishment to maintain throughput.

The ultimate choice to ring fence yields on your Horizon platform is the 2Di and HawkEye® combo, representing an unmatched technology advantage. Select this optimum and industry-leading alliance of Productivity Tools to substantially increase yield. The process is simplicity itself: deploy detailed 2Di inspection first to validate critical board sites, and then use HawkEye to rapidly verify other areas of the board. The result is the highest confidence in output quality and consistency, with the added advantage of feedback that keeps your process tuned to perfection.



More productivity choices

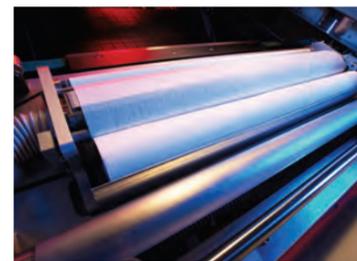
Horizon throughput enhancement doesn't stop with Speed-Up Module options, and ring-fencing yield is not the sole preserve of inspection tools. From understencil cleaning, to print verification, automatic board support and enclosed head printing, you can select from a wide range of Horizon productivity choices to enhance yield and throughput.

A central component of maintaining yields and keeping your process in control is understencil cleaning. You may have print processes today that don't require cleaning cycles, but for applications like ultra fine pitch printing, effective cleaning is often critical to output. Horizon offers you two choices of automated understencil cleaning option: DEK's Blue cleaner or the multi-award-winning Cyclone. Both are controlled by the Instinctiv™ V9 productivity powerhouse, and both can be invoked automatically by feedback from other yield-enhancing tools, such as HawkEye®.

Cyclone takes understencil cleaning to a whole new level. With its five-stage cleaning head, Cyclone effectively increases the active cleaning area to deliver a comprehensive result that enhances yields. It also performs the operation faster and takes just two passes, but still deploys wet, dry and vacuum resources – and does so using just half the cleaning roll fabric to keep costs in control. Complementing this productivity advantage even further, DEK has engineered a wide range of quality fabric cleaning materials to optimise your process performance at every level. Backed by our complete process expertise, Cyclone's impressive performance cuts cleaning time in half, giving you further choice: either clean more frequently to minimise the likelihood of aperture blockage or underside smearing potentially boosting yield; or simply clean faster at the same intervals to boost throughput while maintaining yield. Cyclone also uses a DEK cassette-based cleaning roll which dramatically reduces the time needed to change cleaning fabric consumables from many minutes to less than thirty seconds. It's another innovation that reduces downtime to help raise productivity.



“AWARD-WINNING INNOVATIONS ENHANCE YIELD AND THROUGHPUT FOR MAXIMUM PRODUCTIVITY.”

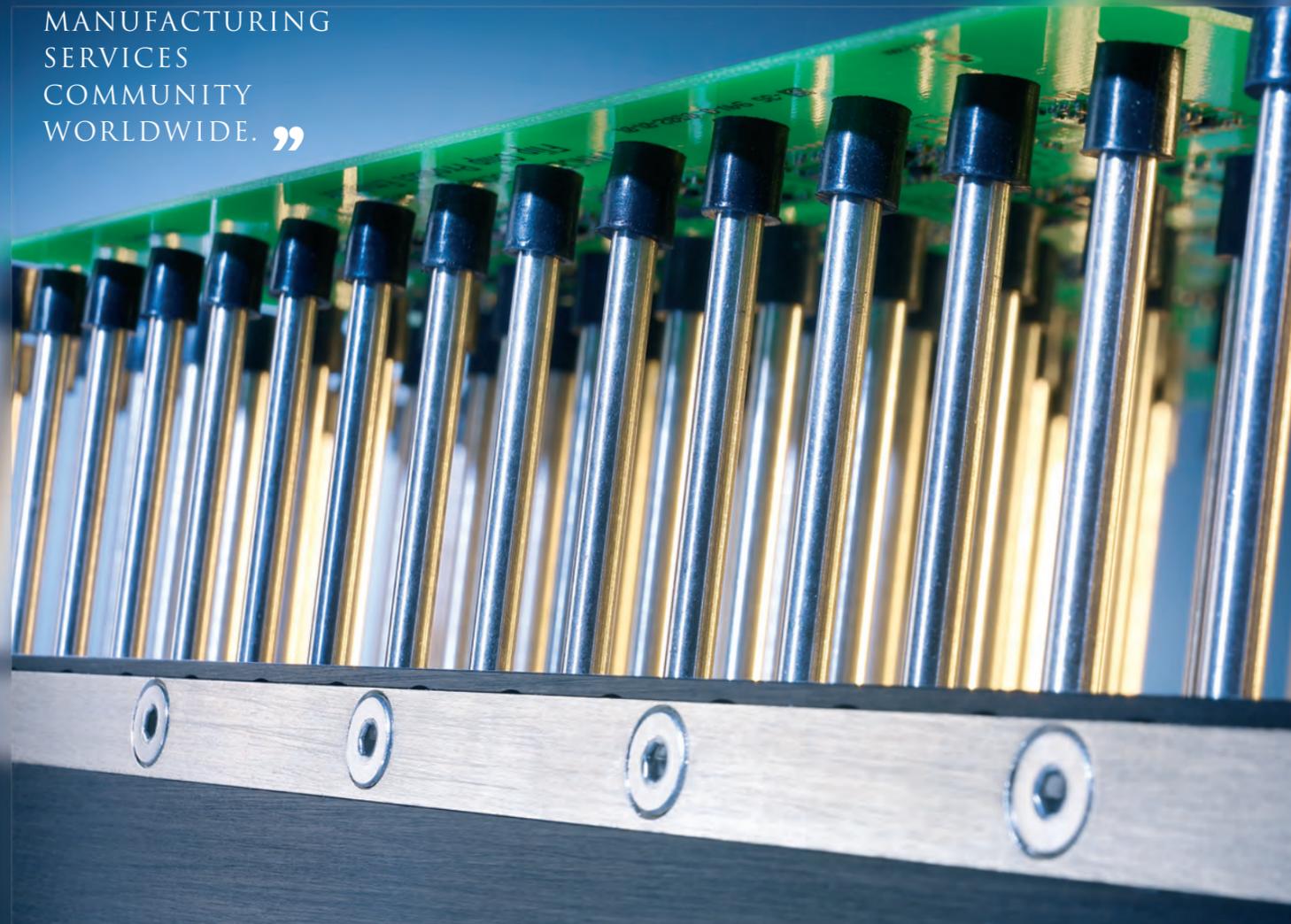


Cyclone understencil cleaning

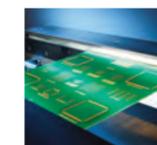


DEK Process Improvement Products

“ HORIZON IS CHOSEN
BY OEMS AND THE
MANUFACTURING
SERVICES
COMMUNITY
WORLDWIDE. ”



Supporting roles



All Horizon platforms come with a tooling table as standard, which is ready to

accept either custom board support technology or DEK's ultra-flexible HD Grid-Lok® tooling. Effective underside support keeps your boards flat, helping to maintain precise paste-on-pad volumes and reduce paste smearing.

Custom tooling is ideal for production runs where a support plate is precision machined to provide optimum support beneath your boards while catering for underside components or routed areas. Custom tooling can be produced in-house or within days through DEK's global fast-turn service directly from Gerber data. The choice is yours.

HD Grid-Lok is the ideal solution for high-mix manufacturing, where product changeovers are frequent. The system uses a high density array of electro-pneumatically actuated pins that rise automatically and conform immediately to the underside topography of any board. HD Grid-Lok is instantly and automatically reconfigurable, completely free of operator dependency, and is the industry's fastest tooling support solution taking less than 20 seconds to set up. So as well as keeping yields high through optimum board-wide support, HD Grid-Lok also improves output levels in high product mix assembly environments.

Your productivity advantage



For over a decade, our ProFlow® enclosed print head technology

has been delivering outstanding process improvement. ProFlow was the first enclosed print head solution, and remains pre-eminent in the industry as its technology is continuously refined. ProFlow's patented dual-chamber quite literally contains many of the process variables that can affect yield, such as on-stencil paste life and paste conditioning. ProFlow technology allows print stroke speeds up to five times faster than conventional squeegees. A choice of ProFlow print heads allows you to either recharge the paste material in the chamber or use pre-filled paste cartridges.

To safeguard yields and smooth the initial assembly set-up and product changeover processes, Horizon offers one more advanced automation solution. Auto Stencil Load is designed to remove operator dependency and completely eliminate the possibility of alignment errors for ongoing productivity into the future.

A global service & support infrastructure second to none

DEK provides incomparable support services delivered by experienced engineers and screen printing experts. Our global reach means we are located conveniently close to you for rapid on-site support and comprehensive training wherever in the world you manufacture. And even closer to you through 24/7 online access to the DEK Knowledge Base and direct Press-To-Talk connection to the DEK help-desk. The help-desk is active across all world time-zones, 24 hours a day, working with you and tracking your problem until it is resolved.

Horizon's advanced productivity options are backed by sophisticated supporting technologies for ongoing peace-of-mind. In addition to the powerhouse that is the next-generation Instinctiv™ V9 machine user interface, Horizon's advanced capabilities are further reinforced by ISCAN Intelligent Scalable Control Area Network. A fast, light and robust internal bus-based communications system, ISCAN replaces conventional wiring looms to deliver responsive and intelligent platform control and remote integration for the ultimate in process support.

Horizon is also fully compatible with a comprehensive range of high-quality Process Improvement Products including precision stencils and screens designed and manufactured in-house by DEK, custom tooling, cleaning wipes and swabs, understencil cleaner fabric rolls, and general printer and work area cleaning solvents. All are orderable online for 24-hour response and near-instantaneous despatch to any global location.



Committed to lowest cost of ownership

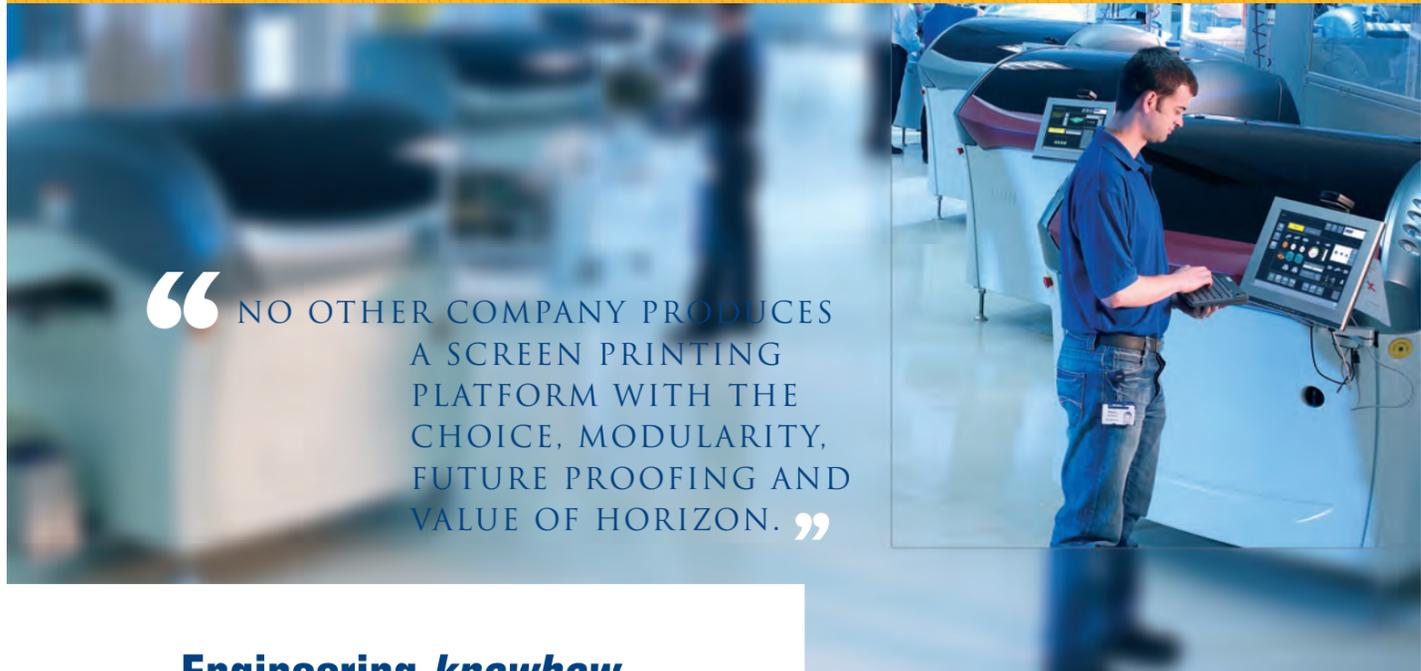
Whole life service and dependability is the means to secure the low ownership costs for your Horizon platform and the best return on your capital investment. One part of that is maximising utilisation by reducing stoppages and downtime to keep the printer productive. Another is driving up throughput and yields to deliver more end-of-line output – and Horizon offers a wealth of Productivity Tool options to let you choose when to do this and how best to achieve it. Yet another is keeping the Horizon in top-performing condition, which is where DEK warranties and service plans come in.

All Horizon platforms benefit from a 12-month warranty that covers parts and labour, subject to our appropriate use terms. You can choose warranty options to extend that cover to 36 months or 60 months from delivery.

Our 'As New' service plan is just that. The agreement provides whole-life support for the platform and includes annual maintenance visits that upgrade your Horizon to the latest 'as new' specification. That ensures throughput and yield capabilities are maintained or even improved. The result is that you continue to be productive and extract maximum value from your initial future-proofed Horizon investment.

And that's the point of Horizon's inherent future proofing. Almost all the Productivity Tool choices open to you today can also be fitted later. Imagine the scale of the returns you could realise by being able to run your Horizon efficiently for longer – possibly years longer – than your original project demanded. In this flexible and scalable way, DEK is committed to delivering the lowest costs in the industry over the operational life of the Horizon platform.

“ DEK IS COMMITTED TO DELIVERING THE LOWEST COSTS IN THE INDUSTRY OVER THE OPERATIONAL LIFE OF THE HORIZON PLATFORM. ”



“ NO OTHER COMPANY PRODUCES A SCREEN PRINTING PLATFORM WITH THE CHOICE, MODULARITY, FUTURE PROOFING AND VALUE OF HORIZON. ”

Engineering knowhow

As a technology-focused company serving a high-tech industry, we understand that our customers know good engineering when they see it. That’s why we are totally committed to maintaining a world-class engineering team, as well as partnering with the world’s leading experts in industry, universities and research organisations.

DEK’s engineering teams are active throughout the Americas, Europe and Asia, studying emerging challenges and developing production-ready solutions ahead of the curve, supported by advanced technical centres on all three continents.

Process Engineering & Applications Excellence

DEK is the only total screen printing solutions partner, delivering not only equipment platforms but also knowledge and support. Our expertise ensures you utilise advanced production equipment to its maximum potential. New Product Introduction (NPI), Process audit, process optimisation and process characterisation services are tailored

to your needs, and provide a complete benchmarking and continuous improvement resource.

No other company has the expertise, resources and sheer range of competencies to help you establish new frontiers, quickly perfect advanced processes, and to keep your production operating

continuously at the highest levels of productivity. And no other company produces a screen printing platform with the choice, modularity, future proofing and value of Horizon.

Pre-configured Performance Platforms

Feature	03iX	02iX	APIX	01iX
Process alignment capability 2 Cpk @ +/-25 microns 6-Sigma	○	○		
Process alignment capability 2 Cpk @ +/-20 microns 6-Sigma			○	○
Machine alignment capability 2 Cpk @ +/-12.5 microns 6-Sigma	○	○	○	○
Cycle time 12 seconds	○			
Cycle time 10 seconds	■	○		
Cycle time 8 seconds	■	■	○	
Cycle time of 7 seconds	■	■	■	○
ISCAN Intelligent Scalable Control Area Network	○	○	○	○
Instinctiv™ V9 user interface	○	○	○	○
Full size stencil frame capacity	○	○	○	○
Standard board size capability	○	○	○	○
Standard tooling table	○	○	○	○
Colour TFT touch screen, keyboard and trackball	○	○	○	○
DEK standard 1-year warranty	○	○	○	○
Semi-auto stencil load	■	○		
Auto stencil load	■	■	○	○
Long board capability	■	■	○	○

Factory fit choices

Adjustable Stencil Mount	■	■	■	■
High Throughput Conveyor	■	■	■	○

Future Proofed productivity options

2Di inspection	■	■	■	■
2Di & HawkEye® combo	■	■	■	■
Cyclone understencil cleaner	■	■	■	■
DEK Blue understencil cleaner	■	■	■	■
ProFlow® DirEkt Imaging	■	■	■	■
Grid-Lok® automatic tooling	■	■	■	■
HD Grid-Lok® automatic tooling	■	■	■	■
HawkEye® 750	■	■	○	○
HawkEye® 1700	■	■	■	■

○ Standard fit ■ Options

Find Out More

To discover how the advanced Horizon technologies and capabilities can help you boost productivity , contact your nearest DEK representative directly or go to www.dek.com/horizon