



DEK TQ

logv  
together



DEK TQ

Maximum performance for the Integrated Smart Factory

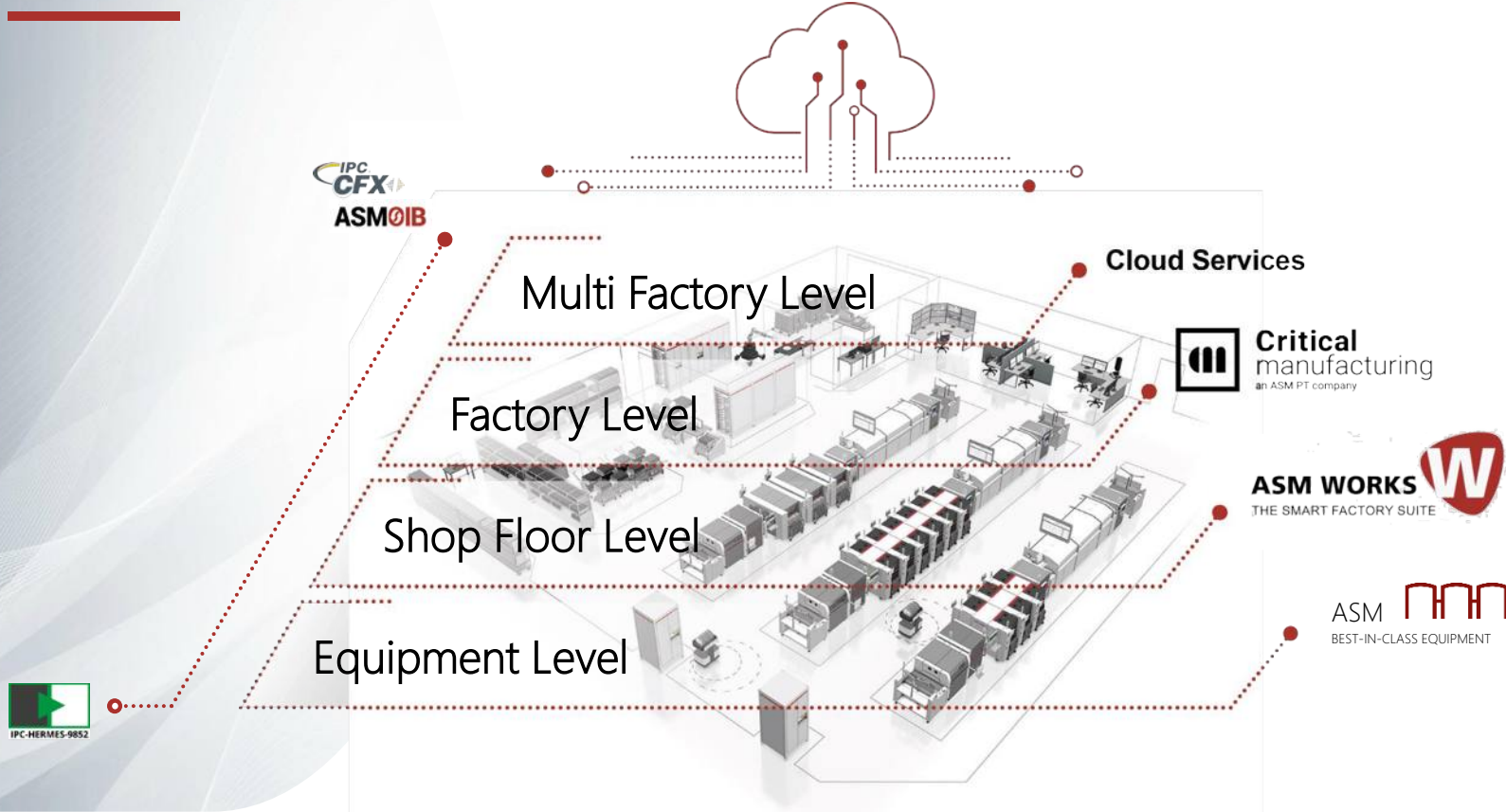
# Agenda

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- 1 Introduction
- 2 Challenges in high volume production
- 3 Our solution: DEK TQ
- 4 Options overview
- 5 Technical specification
- 6 What's next
- 7 One more thing: ASM ProcessExpert



## OUR MISSION: THE INTEGRATED SMART FACTORY



## Unmatched Printing Know-how



**DEK**

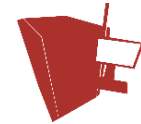
ASM is the one of the largest and most established printer suppliers in the industry.



ASM is the world's largest stencil manufacturer (all types and technologies).



ASM is the only printer supplier that offers all expertise, materials and toolings for a stable print process.



ASM ProcessLens is our advanced SPI system, the first solution to fully automate print process optimization.



## ASM Printer portfolio

### Flexible Performance



#### DEK NeoHorizon 03iX

8 sec /  $\leq 215$  PCB/h  
620 x 508.5 mm  
Wet print accuracy:  
2  $C_{pk}$  @  $\pm 25 \mu\text{m}$  ( $\pm 6$  Sigma)



#### DEK NeoHorizon 01iX

6.5 sec /  $\leq 244$  PCB/h  
620 x 508.5 mm  
Wet print accuracy:  
2  $C_{pk}$  @  $\pm 20 \mu\text{m}$  ( $\pm 6$  Sigma)



### High performance & flexibility

#### DEK TQ L

6.5 sec  
Max. PCB size: 600 x 510 mm



### Maximum Performance

#### DEK TQ

5 sec  
Max. PCB size: 400 x 400 mm



# Main requirements by segments



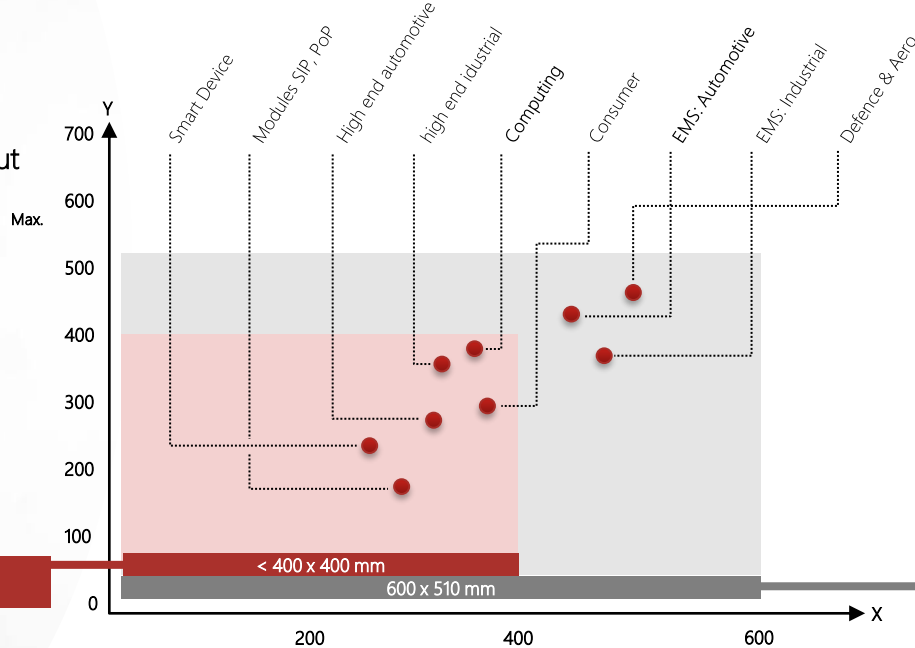
DEK TQ

Maximum throughput

5 sec /  $\leq 262$  PCB/h  
PCB size: 400 x 400 mm  
Max print area: 400 x 400 mm  
 $> 2 \text{ } c_{pk} @ \pm 17,0 \text{ } \mu\text{m} (\pm 6 \text{ Sigma})$



Maximum performance



DEK TQ L

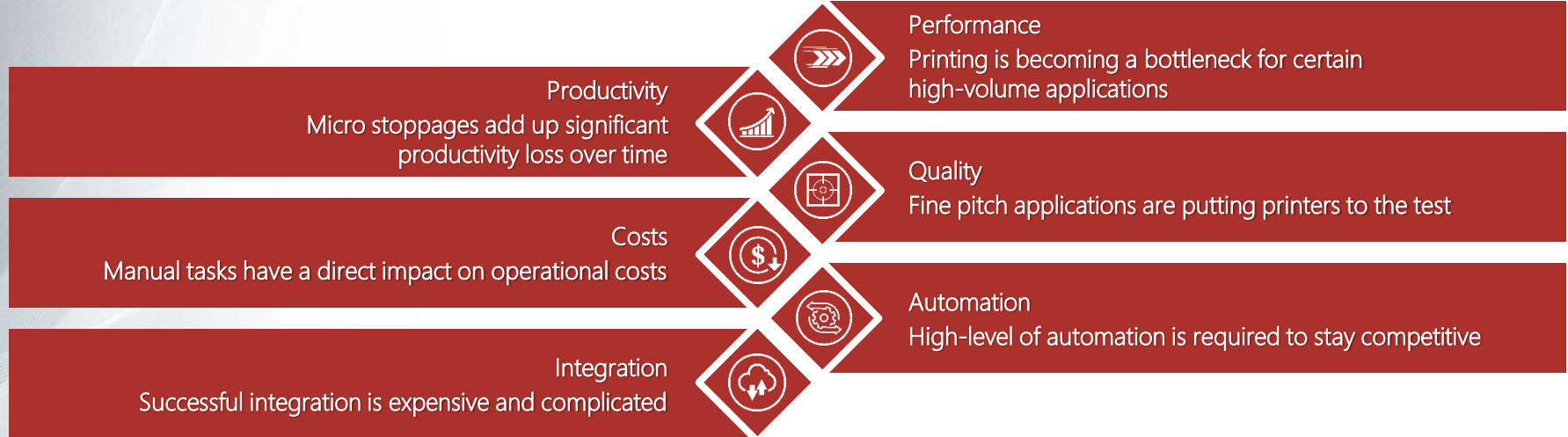
High throughput

6.5 sec /  $\leq 244$  PCB/h Max.  
PCB size: 600 x 510 mm Max print  
area: 560 x 510 mm  
 $> 2 \text{ } c_{pk} @ \pm 17,0 \text{ } \mu\text{m} (\pm 6 \text{ Sigma})$



High performance

## General Challenges in High Volume Production





## OUR Solution: DEK TQ



Maximum throughput



Highest print quality



Certified wet print accuracy



Non-stop carefree production



Easy integration





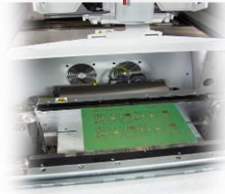
Maximum throughput

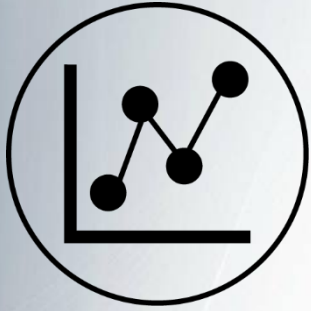


5 seconds core cycle time

## Maximum throughput

- New 3-stage transport system for extremely fast throughput
- New machine design with a record small footprint of 1.3 m<sup>2</sup>
- Fully automatic paste management system to reduce operator workload
- Back-to-back (B2B) configuration for high-volume production





Highest print quality

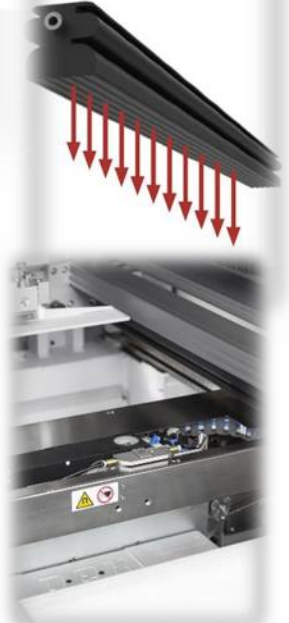


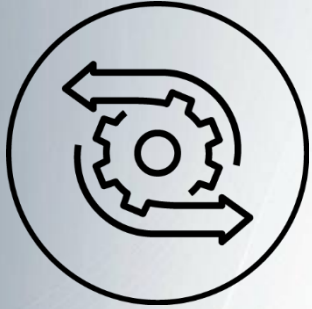
Our most accurate printer yet, and, we prove it.

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## Highest print quality

- Off-belt clamping eliminates the influence of the belt on the alignment accuracy
- New stencil fixture supports the whole length of the stencil frame resulting in a very secure hold
- Flexible optional clamping system All Purpose Clamping for all process requirements
- DEK Alignment is a proven and patented solution for reliable, high-precision printing
- Wet print accuracy of  $\pm 17.5 \mu\text{m}$





Non-stop carefree production



One complete production shift without operator intervention



## Non-stop carefree production

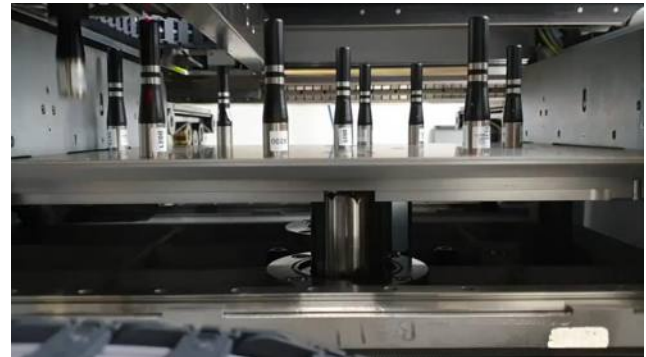
- Fully linear driven, flexible and programmable under stencil cleaner
- Integrated solvent tank in the front of the printer
- Zero-line stop paste replenishment by new Dual Access Cover option
- New under stencil cleaning system (USC) + Dual Access Cover



# DEK TQ - Smart Pin Placement

## Automatic tooling pin change over

- 30 pin configurable magazine
  - 4mm and 12mm diameter pins possible
- Poke-yoke automatic tooling placement
- Verification of tooling position and height
- Programming via
  - ASM Printer Programming
  - Board image and Gerber import
    - go/no go programming of tooling pin positions.





Easy integration



What if your new machine could be integrated seamlessly without any complexity?

**Critical manufacturing**  
an ASM PT company

IPC  
CFX

**ASM OIB**



## Open interfaces to ASM systems and other equipment

- Fully integrated into ASM line and factory software solutions
- Open standards: IPC-HERMES-9852 / IPC-CFX
- MES connections via ASM OIB
- Closed loop to SPI



# Technical specification

Machine typ	DEK TQ
Standard configuration	Specifications
Machine alignment capability	> 2.0 Cmk @ $\pm 12,5 \mu\text{m}$ , ( $\pm 6$ sigma)
Wet print capability	> 2.0 Cpk @ $\pm 17,5 \mu\text{m}$ , ( $\pm 6$ sigma)
Core cycle time	5 secs
Maximum print area	400 mm (X) $\times$ 400 mm (Y) (single-stage mode)
Machine control	NuMotion control System
Camera positioning	Linear motors and high-precision encoders
Squeegee pressure mechanism	Software-controlled, motorised with closed-loop feedback
Stencil positioning	Automatic loading incorporating squeegee drip tray
Substrate size (min.)	50 mm (X) $\times$ 40,5 mm (Y)
Substrate size (max.)	250 mm (X) $\times$ 400 mm (Y) (3-stage mode) 400 mm (X) $\times$ 400 mm (Y) (single-stage mode)
Machine dimensions	1,300 mm (L) $\times$ 1,000 mm (W) $\times$ 1,600 mm (H)
Machine weight	905 kg unboxed (dependent upon configured options)



# Technical specification

Machine type	DEK TQ	DEK TQ L
Machine alignment capability	> 2.0 Cmk @ $\pm 12,5 \mu\text{m}$ , ( $\pm 6$ sigma)	
Wet print capability	> 2.0 Cpk @ $\pm 17,0 \mu\text{m}$ , ( $\pm 6$ sigma)	
Core cycle time	5 secs (3-stage mode)	6.5 secs (3-stage mode)
Maximum substrate size	400 mm (X) $\times$ 400 mm (Y) (single-stage mode)	600 mm (X) $\times$ 510 mm (Y) (single-stage mode)
Maximum print area	400 mm (X) $\times$ 400 mm (Y) (single-stage mode)	560 mm (X) $\times$ 510 mm (Y) (single-stage mode)
Substrate size (min.)	50 mm (X) $\times$ 50 mm (Y)	
Substrate size (max.)	250 mm (X) $\times$ 400 mm (Y) (3-stage mode) 400 mm (X) $\times$ 400 mm (Y) (single-stage mode)	300 mm (X) $\times$ 510 mm (Y) (3-stage mode) 600 mm (X) $\times$ 510 mm (Y) (single-stage mode)
Machine control	NuMotion control System	
Camera positioning	Linear motors and high-precision encoders	
Squeegee pressure mechanism	Software-controlled, motorised with closed-loop feedback	
Stencil positioning	Automatic loading incorporating squeegee drip tray	
Adjustable Stencil Sizes (AWSM)	by factory setting	factory setting or optional AWSM
Machine dimensions	1000 mm (L) $\times$ 1300 mm (W) $\times$ 1600 mm (H)	1300 mm (L) $\times$ 1500 mm (W) $\times$ 1600 mm (H)
Machine weight	905 kg unboxed (dependent on configured options)	950 kg unboxed (dependent on configured options)





**THANK YOU**

Gianluca Garbellini

**Together  
#1**