



KONICA MINOLTA

Konica Minolta Inkjet Business Introduction To JIVM2020 customers

June 2020
KONICA MINOLTA, INC.

Outline

- Name of Business Unit IJ Component Business Unit
(belong to Material & Component Business Head Quarter)
- Head of division Hiroyasu Endo (Group executive officer)
- Location of HQ Hino Tokyo
- # of Employees around 240(excluding production)
- Oversea operation No oversea office, assign partner company in UK/China for customer support
- Business domain Sales of print head to OEM customers
Sales of ink to OEM customers
- Production site 3 sites in Japan(Tokyo, Yamanashi, Kumamoto)



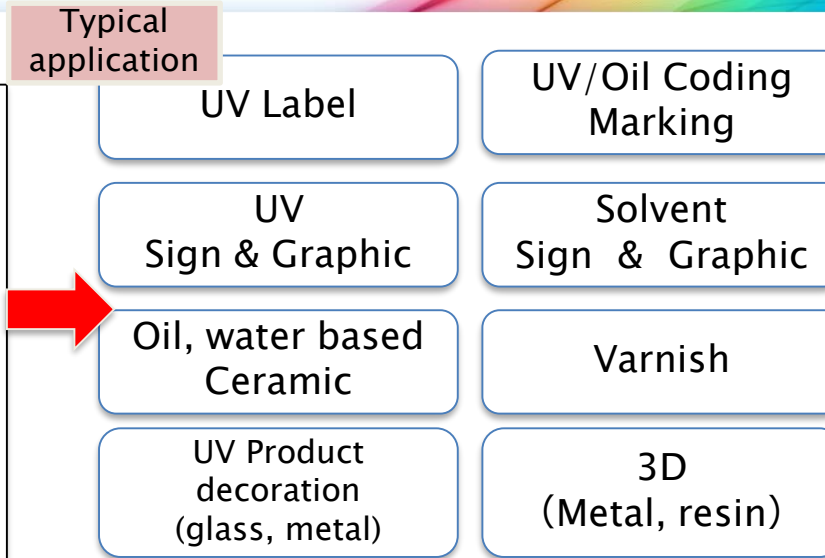
- 1977 Start the development of Inkjet print head technology
- 1998 Launch the 1st digital textile printer “**Nassenger1**”
- 2000 Start business of supplying print head to OEM customers
- 2004 Launch the digital textile printer “**Nassenger V**”
- 2005 Launch of **KM512** series print head
- 2008 Launch of **KM1024** series print head
- 2011 Launch of **KM1024i** series print head
- 2014 Launch of **KM1800i** series print head
- 2015 Launch of single pass textile printer “**SP1**”
- 2016 Launch of B2 sheet fed high speed digital inkjet printer “**KM1**”
- 2018 Complete the **asset purchase** of Panasonic Inkjet Technology
- 2019 Launch the first nozzle recirculation head 1024aLHG-RC



Category of technology and target market

Bulk PZT

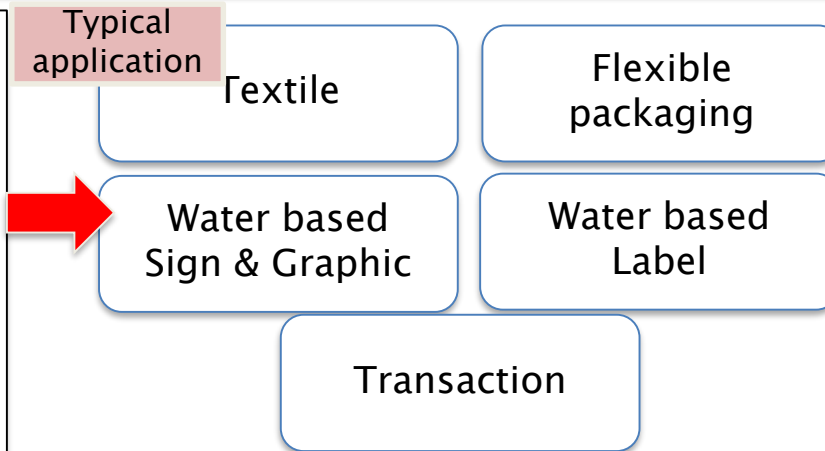
- (advantage)
- Able to eject wide variation of viscosity of functional fluids.
 - Able to cover small to large size of droplets.
- (disadvantage)
- Limitation of high resolution
 - Limitation of small drop size



Original Technology of Konica Minolta

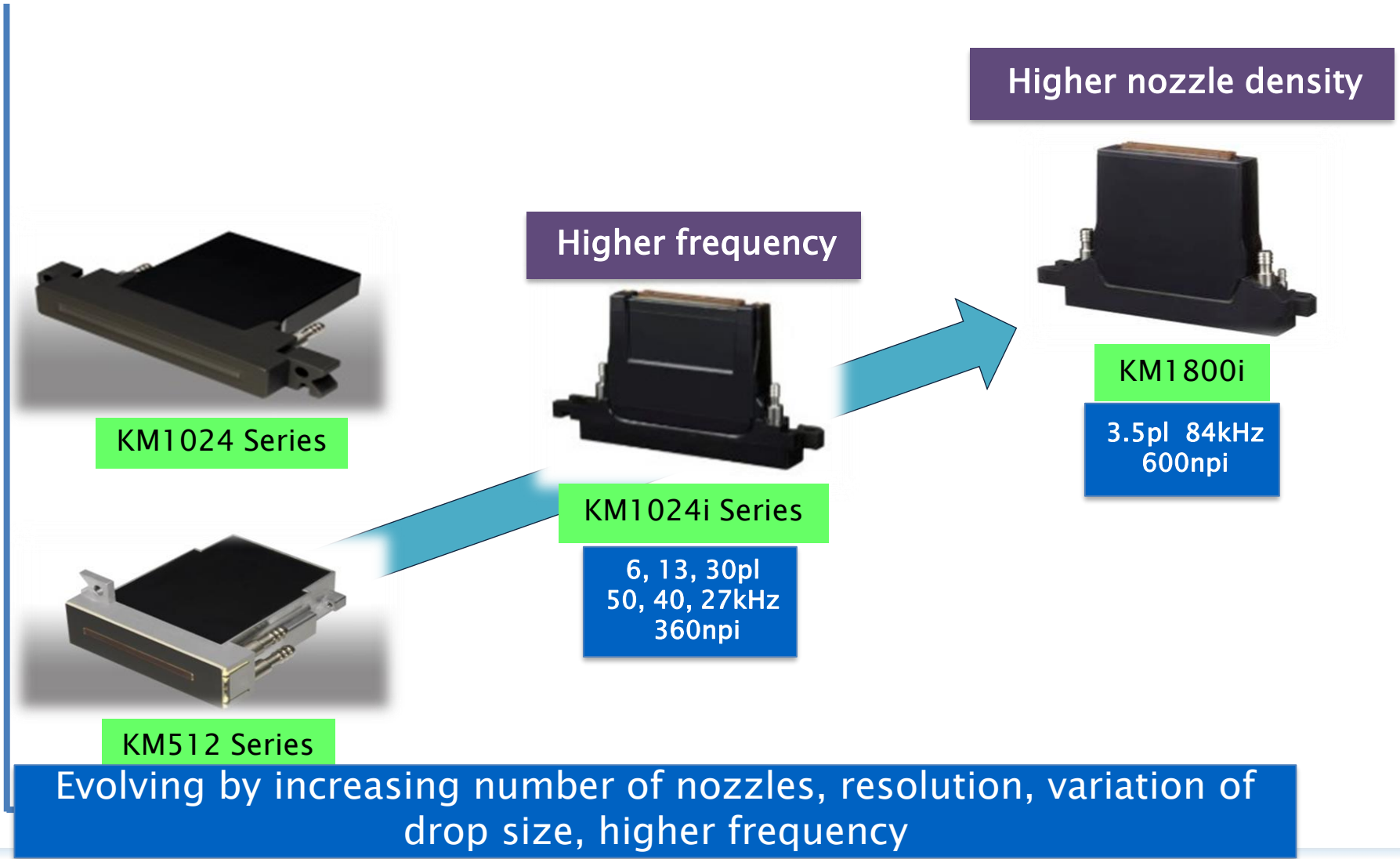
Thin Film PZT

- (advantage)
- High resolution, small drop size
- (disadvantage)
- Limitation of heat resistance
 - Limitation to low viscosity ink

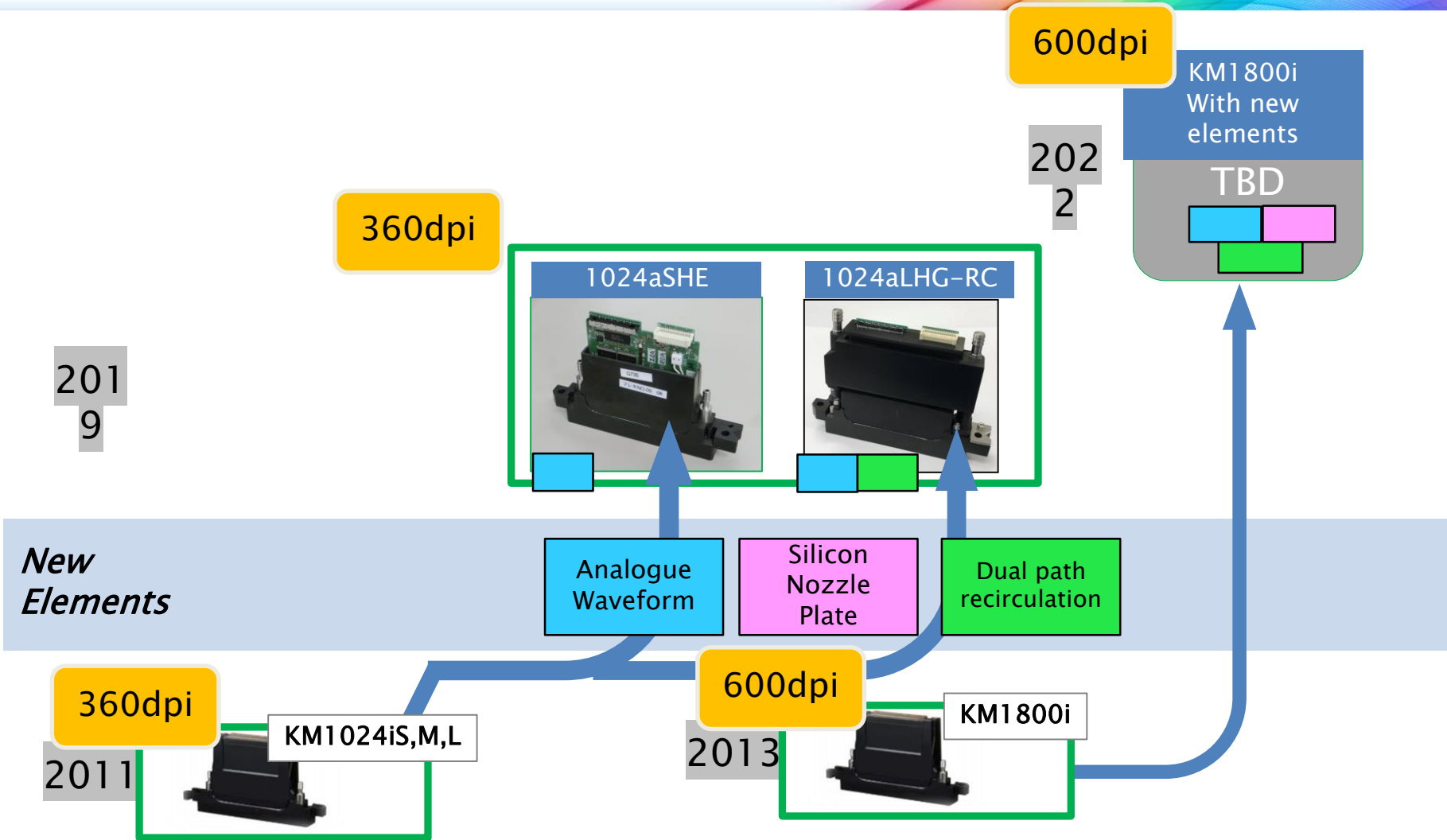


New category by acquiring Panasonic asset

Both PZT technology has a different target application



Konica Minolta Printhead Roadmap (Bulk PZT)

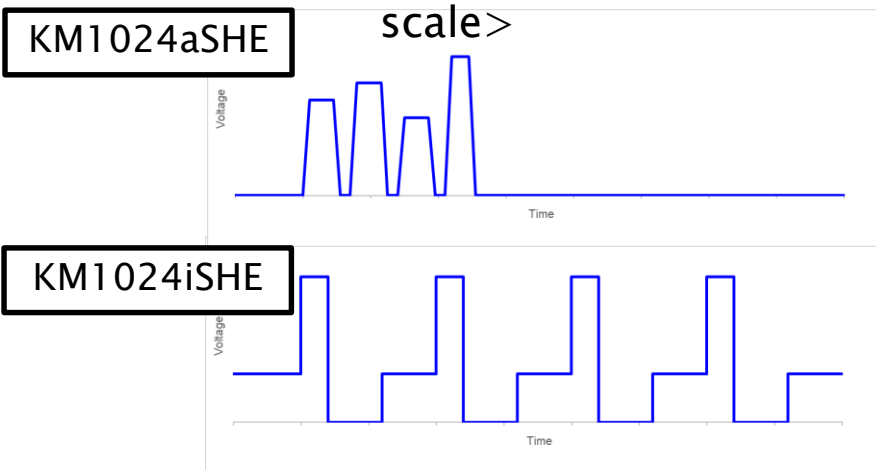


Adding new technical elements to the existing product platform to increase the performance of the print head

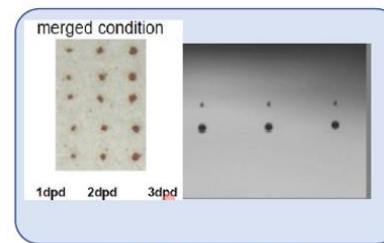
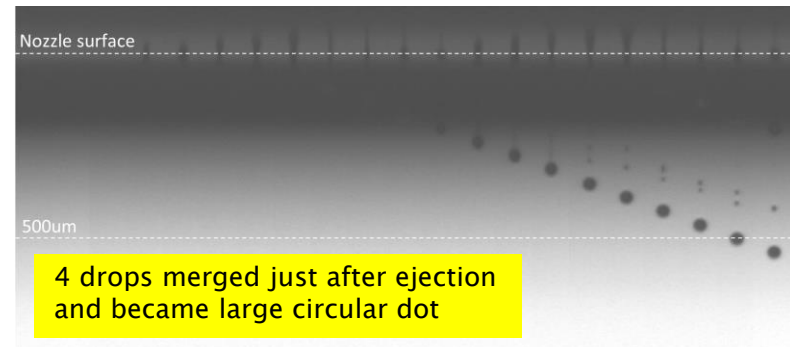
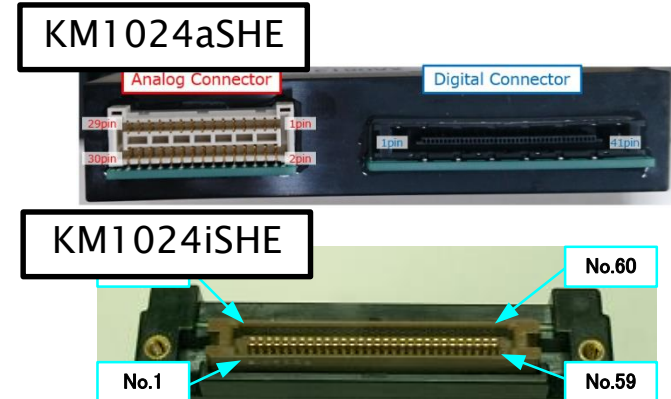
Features;

- High jetting performance at grey scale mode
Ex.) KM1024iSHE : 4dpd GS at 12.5kHz
KM1024aSHE : 4dpd GS at 22kHz
- High flexibility of analogue waveform for **multi-drop formation**
- Analogue switch type driver electronics (New electrical interface)

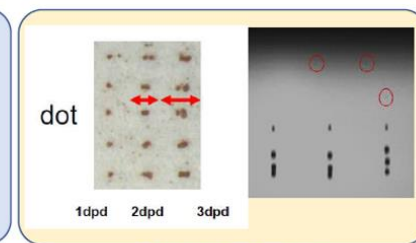
<Example of 4dpd waveform at same time



<Electrical connector image>



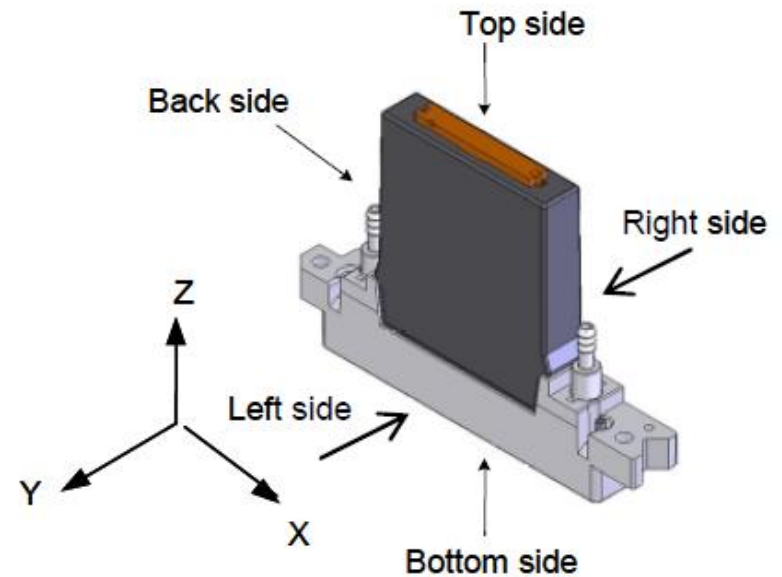
KM1024aSHE



KM1024iSHE

Benefit

- Superior angle deviation compared against the current Polyimide NP
 - Angle deviation is two times better than the current NP
- Accurate nozzle positioning
 - Narrow variation of row lengths(X-Direction), positioning of each nozzle and each row(Y-Direction)



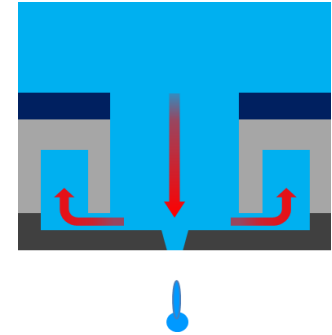
Main Features

Accurate and stable jetting with the unique dual nozzle recirculation flow path

Enough flow speed to prevent particle sedimentation, and nozzle drying.

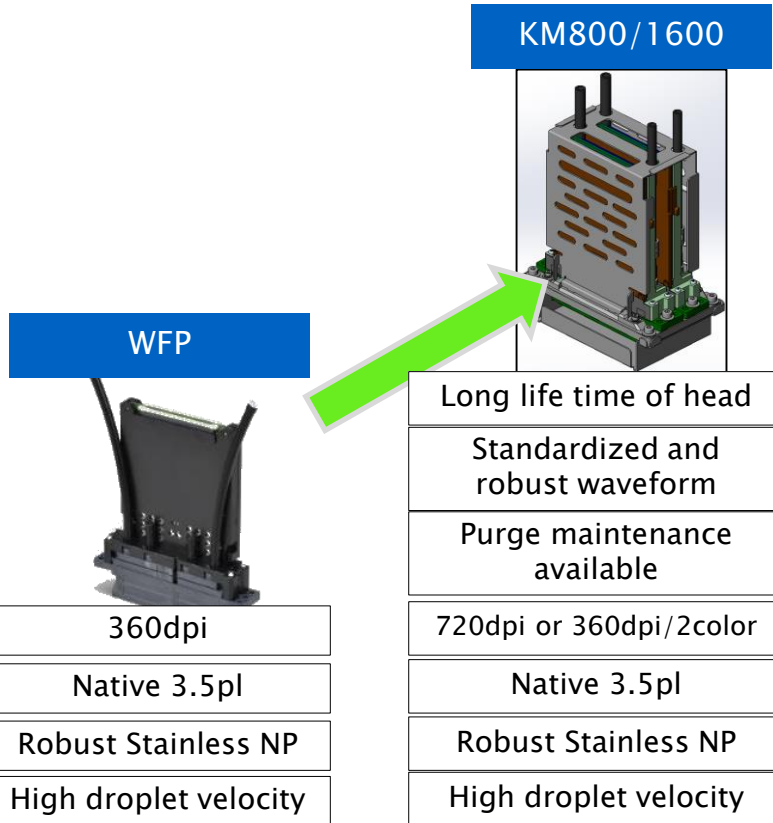
Working with special ink(Titanium Oxide white ink, ceramic ink, metal particle ink, 3D ink)

End shooter design to achieve stable jetting with superior angle deviation compared against Side shooter design.



| Item | KM1024iSHB | KM1024iMHE-D | KM1024iLHE-30 | KM1024iMAE-C | KM1024iSAE-C | KM1800iSHC-C |
|-------------------------------------|--------------|--------------|---------------|--------------|--------------|---------------------------|
| Nozzle number | 1024 | 1024 | 1024 | 1024 | 1024 | 1776 |
| Nozzle resolution (npi) | 360 | 360 | 360 | 360 | 360 | 600 |
| Jetting frequency (kHz) | 50 | 45 | 27 | 27 | 43 | 76 |
| Built in heater | Yes | Yes | Yes | No | No | Yes |
| Applicable ink | Sol, Oil, UV | Sol, Oil, UV | Sol, Oil, UV | Water based | Water based | Sol, Oil, UV, water based |
| Drop volume at 6m/s (pL) | 6 | 13 | 30 | 14 | 7 | 3.5 |
| Operation temperature range | RT – 55°C | RT – 55°C | RT – 55°C | RT | RT | RT – 80°C |
| Typical Ink viscosity range (mPa•s) | 7-12 | 7-12 | 7-12 | 6-8 | 6-8 | 8-12 |
| Waveform | Digital | Digital | Digital | Digital | Digital | Digital |

| Item | KM1024aSHE | | KM1024aLHG-RC | | |
|-------------------------------------|--------------|----|---------------|------|-----|
| Nozzle number | 1024 | | 1024 | | |
| Nozzle resolution (npi) | 360 | | 360 | | |
| Jetting frequency (kHz) | 40 | 22 | 26 | 13.3 | 5.7 |
| Drop volume at 6m/s (pL) | 6 | 20 | 25 | 75 | 225 |
| Operation temperature range | RT - 55°C | | RT - 55°C | | |
| Built in heater | Yes | | Yes | | |
| Applicable ink | Sol, Oil, UV | | Sol, Oil, UV | | |
| Typical ink viscosity range (mPa•s) | 8-12 | | 9-13 | | |
| Nozzle Level Recirculation | - | | ✓ | | |
| Nozzle Plate | Polyimide | | Polyimide | | |
| Waveform | Analogue | | Analogue | | |



| Specification | KM800 | KM1600 |
|--|---|----------------------------|
| Number of nozzles | 800 | 1600 |
| Nozzle resolution [npi] | 360 | 720 (360npi by 2 color) |
| Dimensions [mm] | 99×18.5×109.5 | 101.5×59.8×109.5 |
| Print width [mm] | 56.4 | |
| Applicable ink | aqueous, solvent (,oil ,UV) | |
| droplet volume [pl] | 3.5 | |
| Gray scale, droplet volume and frequency | 5 / 14 / 23pl @18kHz (for aqueous ink) 5 / 14pl @20–25kHz (for solvent ink) ※TBD | |
| Internal heater | No | |
| Nozzle plate | SUS | |
| Waveform input | Analogue waveform | |
| Ink viscosity [mPa·s] | 5–7 | |
| Droplet velocity which satellite generates [m/s] | 7–8 (for aqueous ink) | |

KM800/KM1600 is a evolution with improved features from the WFP print head which was originally supplied from Panasonic



KONICA MINOLTA

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