Single Pass Print Engines for Industrial Inkjet Printing
Overview
PPSI supplies digital inkjet printing products at 3 different levels of integration:

- Complete custom printers, either for printing roll-to-roll (web-based) on label-stock, film, cartonboard or other materials; or conveyor-based printers for printing on sheet materials or 3-dimensional products. Also vision-guided printing systems.

- Digital print engines for integration into existing production equipment such as flexographic presses, converting lines, or product assembly lines.

- Inkjet system components, such as ink supplies, datapath electronics and software, maintenance stations, and precision-engineered printbars.

The DICE (“Digital Inkjet Color Engine”) print engines from PPSI represent the middle tier of this ‘solution stack’ and have been developed for high speed single pass inkjet printing applications.

Features of the DICE Print Engines

High Jetting Reliability - DICE print engines include recirculating ink supply systems. For printheads that use recirculation, the recirculating ink systems provide a constant supply of fresh ink at each nozzle. This increases jetting reliability in several ways, primarily by automatically recovering from ‘jet-outs’ caused by mechanical shock or by air bubbles in the ink.

Accurate Arrays of Replaceable Printheads - DICE print engines include large arrays of piezoelectric drop-on-demand (‘DOD’) printheads. High accuracy print bar and precision alignment surfaces eliminate the need for time consuming mechanical printhead adjustments when replacing a printhead.

Modular Control System - DICE print engines include controls for the recirculating ink supplies, and drive electronics and software for image generation. The control system has been designed as a
Options and Configurations
The DICE print engines from PPSI come in several variants to cover a broad range of industrial inkjet printing requirements.

**DICEbase Series** – Print engines optimized for positioning over a conveyor or other flat material transport system. These systems may be used to jet a single-color ink, or a varnish-coat, white undercoat, or functional fluid; or they may be configured for 4-6 color printing in register. They use a staggered array of printheads for each color plane.

Basic print engines are supplied without automatic head tending and height adjustment.

**DICEbase Plus Configuration** – Print engines with an integrated Automatic Maintenance option. This option includes head tending and printhead height adjustment for easy integration and high reliability, to eliminate dependence upon manual operator intervention.

**DICEweb Series** - Print engines with curved print bars and integrated precision roller assemblies for high-performance web-based applications. For excellent color registration when printing roll-to-roll, it is essential to control web weave – this is what the arched roller design of the DICEweb series accomplishes, providing excellent print quality, even when mounted on old flexo presses that are no longer capable of maintaining accurate register without extended set-up and maintenance times.

(Note: single-color web printing can also be accomplished by the lower-cost DICEbase system, because registration is less critical.)
How To Specify DICE Print Engine Model Numbers

The available DICE print engine models are listed below by product family. Individual data sheets with dimensions and specifications are available.

a. **DICE base**
   - Available in 2.5", 10", 20" or 30" max widths. (Others by special order.)
   - ‘Auto-Maintenance’ option – adds DICE Plus functionality
   - Available in up to 6 colors.

b. **DICE web**
   - Available in 7.5", 15" or 25" max widths. (Others by special order.)
   - Available in up to 6 colors.
   - ‘Auto-Maintenance’ included

How part numbering works:

\[
\text{DICE base} - xWyC-B
\]

- \(x\) = number of printheads (each 2.5" or 62.5mm wide)
- \(y\) = number of colors
- \(B\) = basic or \(P\) = Plus (includes Auto-Maintenance) option

**Part Number Examples:**

<table>
<thead>
<tr>
<th>Part number</th>
<th>Width (inches)</th>
<th># of colors</th>
<th>Total heads</th>
<th>Arched roller</th>
<th>Auto-maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DICE base-1W1C-B</td>
<td>2.5&quot;</td>
<td>1</td>
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<td>NO</td>
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<tr>
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<td>10&quot;</td>
<td>1</td>
<td>4</td>
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<tr>
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<td>30&quot;</td>
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<td>12</td>
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<tr>
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<td>16</td>
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<td>YES</td>
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<tr>
<td>DICE web-4W4C-P</td>
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<td>16</td>
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<td>YES</td>
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<tr>
<td>DICE web-3W6C-P</td>
<td>7.5&quot;</td>
<td>6</td>
<td>18</td>
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<tr>
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<td>40</td>
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<td>YES</td>
</tr>
</tbody>
</table>

**DICE Applications**

DICE print engines can be used for:

- Digital label printing e.g. adding digital to flexo presses
- Adding inkjet printing of variable data to converting lines
- Printing of flexible packaging and folding cartons
- Replacing pad-printing on products
- Replacing screen printing on products and textiles
- Late-stage Customization / Personalization
- Just-in-Time production for inventory and scrap reduction