EITRE® Large Area

NANOIMPRINT FOR SUBSTRATES UP TO 500 x 500 mm

HIGHLIGHTS

- Versatile semi-automatic tool
- Superior residual layer uniformity across the full substrate area
- High accuracy pattern replication for micro sized patterns down to sub-50 nm

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Key Features

- The EITRE® Large Area Nano Imprint Lithography (NIL) system is a semi-automated lithography system, enabling high accuracy and repeatability pattern replication with a resolution below 50 nm.
- The EITRE® system is particularly versatile because of the flexibility inherent in the system allowing different imprint processes to be used. The imprint processes include hot embossing, thermal NIL, UV NIL and Obducat’s patented Simultaneous Thermal and UV (STU®) process. The fact that the Eitre® system can perform a range of imprint processes it enables the use of a wide range of imprint materials.
- The embedded SoftPress® technology ensures a uniform pattern replication over the whole substrate area in one shot with an excellent imprint quality. It guarantees the thinnest and most uniform residual layer over the entire imprint area, enabling precise and simple downstream processing.
- The EITRE® systems are suitable for use in R&D as well as pilot production within application areas such as Micro- and Mini LED displays, LCD displays, optical devices, medical devices, security printing, solar cells and functional surfaces and others.
- Designed according to European safety regulations and CE Mark

Obducat’s NIL Process Technologies

IPS® - Intermediate Polymer Stamp
The patented IPS® technology is based on making a replication of the master stamp into a soft Intermediate Polymer Stamp (IPS®). The IPS® is then used in a second imprint step to transfer the structures onto the target substrate. The IPS® enables contamination control, increases the master stamp lifetime and makes the imprint process less sensitive to substrate contaminations and surface roughness.

SoftPress®
With Obducat’s patented SoftPress® technology, the imprint pressure is applied using compressed gas, ensuring pressure uniformity over the entire imprint area. This allows the stamp or IPS® to conform to the substrate, eliminating negative effects from thickness variations, bow or waviness. SoftPress® enables thin and uniform residual layer across the substrate, which is critical for enabling high-resolution imprinting and pattern transfer fidelity.

STU® - Simultaneous Thermal and UV
The patented STU® technology combines, in one imprint sequence, the simultaneous use of thermal- and UV based imprint processes. The STU® process allows for increased polymer flow rate giving a shorter process time as well as enabling improved material compatibility and thereby a wider selection of workable imprint materials.

Automated IPS® application and demolding
The patented automated demolding function developed by Obducat for use with the patented IPS® and SoftPress® technologies makes the application of the IPS® material accurate and repeatable, ensuring that the pattern fidelity is kept at the highest possible level as well as preserving the stamp from any manual handling during the imprint sequence.

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EITRE® Large Area
TECHNICAL DATA

TOOL CONFIGURATIONS

The standard configuration of the EITRE® System includes imprint module based on the proprietary SoftPress® technology, Automatic foil handling for IPS® material, Computer Controlled User Interface, Manual Stamp and Substrate Loading, SoftPress® Technology License for Non-Commercial R&D.

The standard imprint configuration is configured to perform both thermal and UV based imprint processes allowing the use of the Obducat proprietary Simultaneous Thermal and UV (STU®) technology.

The configuration with thermal imprint, UV imprint and STU® imprint enables a high flexibility of different imprint methods and materials. The UV-module is based on a high-performance water-cooled LED light source ensuring a long lifetime and low maintenance.

**Substrate Size**
Up to 500 mm x 500 mm

**Thermal imprint and UV imprint**
Both included

**Imprint Pressure (minimum)**
1 bar

**Imprint Pressure (maximum)**
20 bar

**Imprint Temperature (minimum)**
Ambient Temperature

**Imprint Temperature (maximum)**
160°C

**Imprint Temperature Setting Accuracy**
± 3°C

**UV Module Specification**
Water cooled LED

**UV WaveLengths**
365nm

**UV Light Power at Sample**
>80mW/cm² – Line Scan type

**Water cooling**
Standard

**IPS® application and demolding**
Automated

**Mini environment**
Class 10 if installed in class 100 room

TOOL OPTIONS

STU® technology license
EITRE® Large Area
TECHNICAL DATA

FACILITY REQUIREMENTS

<table>
<thead>
<tr>
<th>Clean-room compatibility</th>
<th>Class 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Temperature</td>
<td>18-32°C</td>
</tr>
<tr>
<td>Relatively Humidity</td>
<td>40 - 65 %</td>
</tr>
<tr>
<td>Power</td>
<td>Ph3 – 400 VAC/N/PE, 50 Hz 63 Amp, CEE Connector</td>
</tr>
<tr>
<td>Vacuum</td>
<td>-0.8 bar</td>
</tr>
<tr>
<td>Compressed Air (CDA)</td>
<td>8 bar</td>
</tr>
<tr>
<td>High Pressure Nitrogen or Air</td>
<td>25 bar</td>
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<tr>
<td>Exhaust Flow</td>
<td>&gt;3000 l / min</td>
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SYSTEM DIMENSIONS

| Dimensions (L x W x H)      | 2725 cm x 1553 cm x 2615 cm    |
| Weight                      | Approx. 2400 kg                |