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## 3D MID Production Line

XENON Automatisierungstechnik GmbH  
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# 3D MID - Introduction



## 3D-MID

- 3D-MID...**M**olded **I**nterconnected **D**eVICES
- Combination of electrical, mechanical, fluidical and optical functions
- Plastic housing is becoming a printed circuit board

## Advantages of 3D-MID, e.g.

- 3D design flexibility
- Miniaturization



Member of Research  
Association „3-D MID e.V.“

## XENON competence

Production of process modules for the  
total MID value chain

# Production line for 3D-MID Combi Switches



Production line for 3D-MID combi switches

- 6 different products / 50 versions, universal upgradeable
- New transfer system with manipulable work piece carriers
- 6-axis-industrial robots controlled by 3D vision systems
- Software based change over by host computer, one-piece-flow functionality
- Product data logging with part-tracking (DMX-Code)



Versions of combi switches



# 3D-MID – Automation of the entire process chain



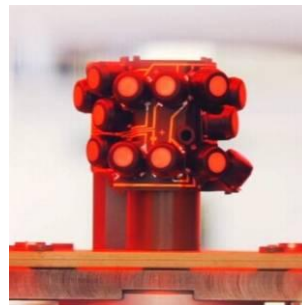
- Quality check of incoming parts (check of the metallization)



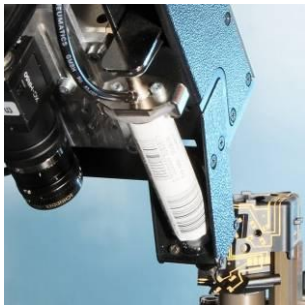
- Placement of SMD- and special components



- Insertion of contact pins (integrated connector)



- AOI of soldered MID parts
- Check presence of components



- Dispensing of soldering paste with subsequent optical inspection



- Electrical final test
- Mechanical final test

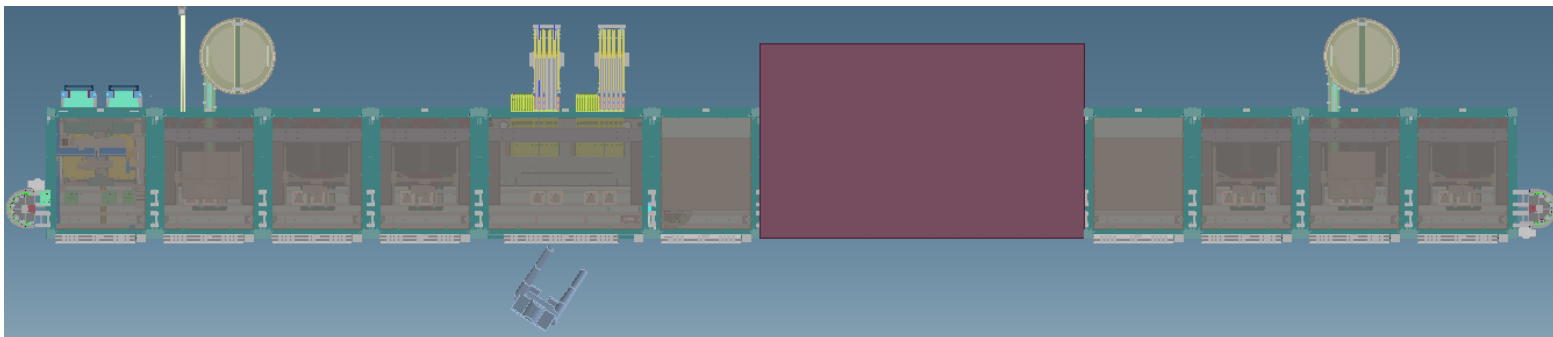
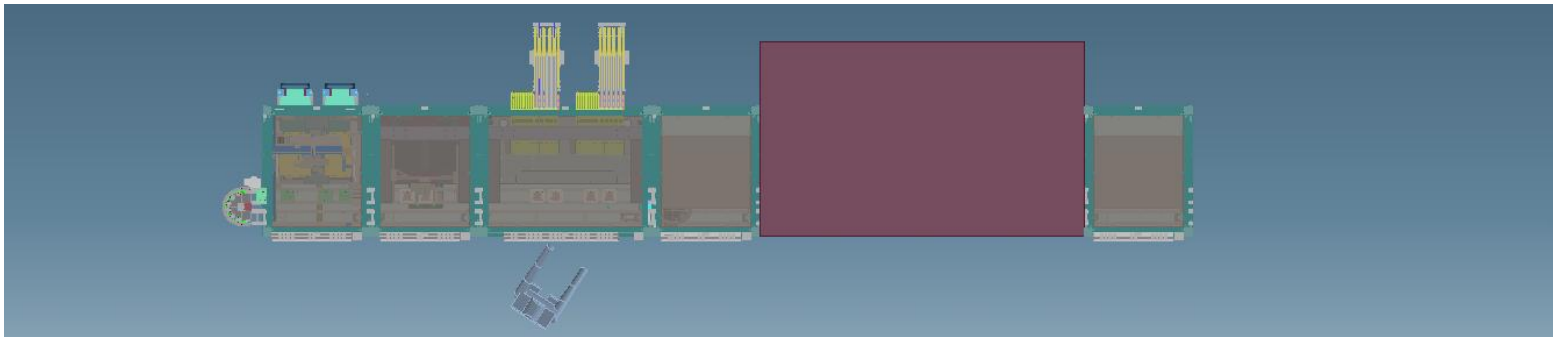


## Production line – technical data

<b>Maximum MID size</b>	<ul style="list-style-type: none"><li>• 100 x 100 x 100 mm, full 3D-functionality up to 270°</li></ul>
<b>Transport system</b>	<ul style="list-style-type: none"><li>• workpiece carrier transfer system with integrated</li><li>• workpiece positioning module</li></ul>
<b>System repeat accuracy</b>	<ul style="list-style-type: none"><li>• <math>\pm 0,05</math> mm (6-axis robot) <math>\pm 0,01</math> mm (linear directly driven gantry-system)</li></ul>
<b>Pad size</b>	<ul style="list-style-type: none"><li>• ca. 0,5 mm x 0,9 mm</li></ul>
<b>Dispense volume</b>	<ul style="list-style-type: none"><li>• ca. 0,06 mm<sup>3</sup> to 1,2 mm<sup>3</sup></li></ul>
<b>Dispense rate</b>	<ul style="list-style-type: none"><li>• 80 ... 120 dots/min</li></ul>
<b>Component spectrum</b>	<ul style="list-style-type: none"><li>• SMD-Components: capsuled and non-capsuled active components; special components, power-LED, switches, switch-keys; contact pins</li></ul>
<b>Measurement technology</b>	<ul style="list-style-type: none"><li>• optical 3D-measuring system incl. distance measurement</li></ul>
<b>Measuring accuracy</b>	<ul style="list-style-type: none"><li>• lateral <math>\pm 2,5</math> <math>\mu</math>m / vertical <math>\pm 10</math> <math>\mu</math>m</li></ul>



# 3D-MID – Scalable, modular production lines



## 3D-MID - Outlook

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### Breakthrough of the MID-technology, e.g.

- Automotive
- Telecommunication
- Medical Technology

### Advantages of the breakthrough of MID-technology, e.g.

- New areas of application by the use of optimized process technologies and materials
- Dynamic development of the technique for production lines
- Higher cost-effectiveness because of scaling effects





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[www.xenon-dresden.de](http://www.xenon-dresden.de)

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