### Implementation Overview

**Safety Node**

<table>
<thead>
<tr>
<th>System integrator</th>
<th>Kieler</th>
<th>System integrator</th>
<th>Wallner Automation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation board available</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Safety conformance level</td>
<td>SIL 3, PLe</td>
<td>SIL 3, PLe</td>
<td>SIL 3, PLe</td>
</tr>
<tr>
<td>SIL-3 mesh software (pre-certified)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>SIL-3 mesh software (pre-certified)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>CAD data (customer, type)</td>
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<td>-</td>
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</tr>
<tr>
<td>CODE</td>
<td>Available</td>
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<tr>
<td>Processor</td>
<td>32-bit ARM NIOS</td>
<td>32-bit ARM NIOS</td>
<td>32-bit ARM NIOS</td>
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<tr>
<td>RAM size</td>
<td>8 MB SDRAM</td>
<td>1 GB DDR3 RAM bis 256 kB</td>
<td>Processor</td>
</tr>
<tr>
<td>Network interface</td>
<td>Ethernet</td>
<td>Ethernet</td>
<td>Ethernet</td>
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<tr>
<td>Multi-protocol ready</td>
<td>+</td>
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<tr>
<td>System interface</td>
<td>SY</td>
<td>SY</td>
<td>SY</td>
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<tr>
<td>Design variants</td>
<td>Custom design</td>
<td>Custom design</td>
<td>Custom design</td>
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<tr>
<td>Custom-specific development</td>
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<tr>
<td>Consulting</td>
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</tr>
<tr>
<td>Phone</td>
<td>+49 6190 9907-0</td>
<td>+49 7302 9611-0</td>
<td>+49 3765 386000</td>
</tr>
<tr>
<td>E-Mail</td>
<td><a href="mailto:info@hilscher.com">info@hilscher.com</a></td>
<td><a href="mailto:info@newtec.de">info@newtec.de</a></td>
<td><a href="mailto:info@wallner-automation.com">info@wallner-automation.com</a></td>
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<tr>
<td>Homepage</td>
<td>hilscher.com</td>
<td>newtec.de</td>
<td>wallner-automation.com</td>
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<thead>
<tr>
<th>System integrator</th>
<th>MESCO</th>
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<th>Wallner Automation</th>
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<tbody>
<tr>
<td>Customer specific development</td>
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<tr>
<td>Phone</td>
<td>+43 7712 35760-0</td>
<td>+49 6190 9907-0</td>
<td>+49 7302 9611-0</td>
</tr>
<tr>
<td>E-Mail</td>
<td><a href="mailto:info@mesco.de">info@mesco.de</a></td>
<td><a href="mailto:info@mesco.de">info@mesco.de</a></td>
<td><a href="mailto:info@mesco.de">info@mesco.de</a></td>
</tr>
<tr>
<td>Homepage</td>
<td>mesco.de</td>
<td>mesco.de</td>
<td>mesco.de</td>
</tr>
</tbody>
</table>

**Legend:** + = yes, 0 = no

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**System Integrator**

- **Kieler**
  - +49 6190 9907-0
  - info@hilscher.com
  - hilscher.com

- **System integrator**
  - +49 7302 9611-0
  - info@newtec.de
  - newtec.de

- **Wallner Automation**
  - +49 3765 386000
  - info@wallner-automation.com
  - wallner-automation.com

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**Evaluation board available**

- SIL 3, PLe
- SIL-3 mesh software (pre-certified)
- CAD data (customer, type)
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- Processor
- RAM size
- Network interface
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- System interface
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POWERLINK and openSAFETY nodes can be implemented as various models which differ with regard to cost and flexibility. Customers can thus choose the optimal solution for their requirements, combining maximum functionality with minimal costs.

POWERLINK master solutions can be implemented on any operating system and any hardware platform, guaranteeing full reusability of existing know-how and equipment. The open source configuration tool openCONFIGURATOR (www.sourceforge.net) hereby guarantees efficient configuration for this open automation solution.

POWERLINK slave interface connections can be realized as multi-protocol solutions and as POWERLINK-only interfaces in both cases using openSAFETY for safety communication.

Multi-protocol slave solutions allow for high flexibility: the component manufacturer must decide on a specific hardware platform and yet need not choose the Industrial Ethernet bus of the module until it is delivered. Choosing openSAFETY as safety protocol combined with such a multi-protocol solution reduces the safety development effort to an absolute minimum.

In a POWERLINK-only interface, all electronics can be optimized for the resource-saving POWERLINK technology, allowing users to implement a very cost-efficient Industrial Ethernet interface.

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**Multi-protocol slave solutions**

- The component manufacturer must decide on a specific hardware platform.
- Choosing openSAFETY as safety protocol combined with such a multi-protocol solution reduces the safety development effort to an absolute minimum.

**POWERLINK-only interface**

- All electronics can be optimized for the resource-saving POWERLINK technology.
- Users can implement a very cost-efficient Industrial Ethernet interface.

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**Examples of implementation designs**

- **Example design 1:**
  - Operating system: Any PC
  - Interface: No-OS
  - Hardware platform: Any hardware platform

- **Example design 2:**
  - Operating system: Any PC
  - Interface: PCIe
  - Hardware platform: ARM

- **Example design 3:**
  - Operating system: Any PC
  - Interface: FPGA
  - Hardware platform: FPGA