Engineered Systems Capabilities

Precision components, stable control and a great deal of experience in engineering are essential for high precision complex motion and positioning solutions. PI is a supplier of technologically sophisticated drive components and high-precision positioners and also offers all levels of integration up to the turnkey solution.

Engineering services have been a part of PI's core business for many years. Complete solutions, from design to manufacturing, delivery, installation to rigorous testing and commissioning, and finally in-process and after-sales support, are part of our seamless service package.

Core Competences:
- Application support and consulting for motion and positioning applications
- Reliability and prompt series production even for large quantities
- Economic design
- Commissioning of turnkey solutions
- Complete multi-axis designs and parallel kinematic robotics
- Broad spectrum of technologies: Drive, guide, and sensor technologies
- In-house motion control electronics and software platform
- Customized software integration such as Epics, LabVIEW, Tango, ...

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Gantry Systems

LASER MATERIAL PROCESSING, WAFER INSPECTION AND ELECTRONICS ASSEMBLY
Air bearing technology provides:
- Precision high-precision positioning
- Excellent velocity stability
- Excellent guiding accuracy up to 5µm/100mm
- Optional active yaw control for gantries
- Direct drive linear & torque motors for smooth, high-speed operation.

Experience with markets such as GEHC’s, PI building an over 200-year-years of known air bearing expertise and offers comprehensive precision air bearing motion control and positioning products and systems.

Peaumony by ACS and SCANLAB

The jointly developed acs3D2D control software enables simultaneous control of a 2D scan head and a 3D scanning system. This allows for advanced applications such as high-speed scanning or parallel processing.

The combined system substantially increases the image field and provides the ability to move the motion of the scan head with the motion of the XY stage, thereby eliminating stitching errors. In addition, the process time is shortened substantially (image by SCANLAB).

No Stiching Errors

Parallel processing (stitching) of large workpieces prone to marking displacement near the edges of adjacent fields. By controlling the motion of the scan head with the motion of the XY stage, stitching errors are eliminated and in addition the process time is shortened significantly (image by SCANLAB).

Typical Applications
- Large area marking
- Glass cutting
- Drilling of large PCDs

Solutions for Motion-Centric Industrial Automation

XY and Portal Systems from PI

Positioning and motion tasks in industrial automation such as those in assembly, semiconductor manufacturing, mechanical engineering and other applications where maximum precision and utmost reliability, high throughput and minimal space requirements are needed.

PI offers a broad range of in-house designed and motion control technologies such as PiniKLAR® based industrial controllers by ACS, where PI holds the major shares, or air bearing technology for optimized guiding accuracy. System engineering for customization and therefore the ideal partner for motion-centric industrial solutions.

Smartie Motion & Positioning

ACS is a world-wide leading developer and manufacturer of modular motion controllers for multi-axis drive systems. The partnership with ACS has put PI into position to supply customized complete systems for industrial applications intended to combine precision, productivity, and reliability all over the world.

PI offers a broad range of in-house drive and motion control technologies such as EtherCAT-based industrial controllers by ACS, where PI holds the major shares, or air bearing technology for optimized guiding accuracy. System engineering for customization and therefore the ideal partner for motion-centric industrial solutions.

Precision and Reliability Simultaneous 2D Processing

High-Accuracy and Ultimate Throughput

Together with SCANLAB and ACS, PI offers a motion control solution for laser internal processing, where continuous or step-by-step laser scan and sample scanning provides the ability to mark and process large projects with high precision and an ultimate throughput.

Key Advantages
- Large field of view, wide range of XY stages
- Significantly increased throughput (up to 81% compared with conventional systems)
- No stitching errors
- Higher precision
- Smooth processing with high dynamics and no stage vibrations at high-speed scanning.

Smarter Motion & Positioning

ACS is a worldwide leading developer and manufacturer of modular motion controllers for multi-axis drive systems. The partnership with ACS has put PI into position to supply customized complete systems for industrial applications intended to combine precision, productivity, and reliability all over the world.

PI offers a broad range of in-house drive and motion control technologies such as EtherCAT-based industrial controllers by ACS, where PI holds the major shares, or air bearing technology for optimized guiding accuracy. System engineering for customization and therefore the ideal partner for motion-centric industrial solutions.

PI holds the major shares, or air bearing technology for optimized guiding accuracy. System engineering for customization and therefore the ideal partner for motion-centric industrial solutions.

Preparatory Specifications

<table>
<thead>
<tr>
<th>Axis</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
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<tbody>
<tr>
<td>Typical</td>
<td>508</td>
<td>508</td>
<td>155</td>
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<tr>
<td>Max. velocity</td>
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<tr>
<td>Max. acceleration</td>
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<td>20</td>
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<tr>
<td>Sensor resolution</td>
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<td>0.002µm</td>
<td>0.002µm</td>
</tr>
<tr>
<td>Integrated encoder</td>
<td>Optical linear encoder, incremental</td>
<td>Optical linear encoder, incremental</td>
<td>Optical linear encoder, incremental</td>
</tr>
<tr>
<td>Feedback</td>
<td>20µm sin/cos</td>
<td>20µm sin/cos</td>
<td>20µm sin/cos</td>
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<tr>
<td>Shaft bearing</td>
<td>Unidirectional</td>
<td>Unidirectional</td>
<td>Unidirectional</td>
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<tr>
<td>Material of base</td>
<td>Granite</td>
<td>Granite</td>
<td>Granite</td>
</tr>
</tbody>
</table>

PIMag® Gantry System

High-Dynamic Positioning in 3 Axes

- Vertical axis with pneumatic counter weight
- 360° x 360° x 200 mm travel range
- Stiching motion
- Direct measuring incremental linear encoders
- Controlled by ACS Motion Control

Throughput, Precision and Reliability

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