

## **Accommodating 300mm Wafers in the RotoRing 300 Rotary Table**

The 350 mm diameter center opening in the [RotoRing300™ rotary table](#) easily accommodates large 300 mm (12") semiconductor wafers, allowing for eased extraction of the chip dies from the wafer during semiconductor assembly manufacturing processes.



### **Smooth Drive System**

The [RotoRing300™ direct drive rotary table](#) from [IntelliDrives](#) adapts linear motor technology, coupled with air bearings, to provide faster and more accurate handling of the 300 mm semiconductor wafers.

### **Full Wafer Rotation**

Presently, semiconductor assembly equipment manufacturers do only limited wafer rotation, but [RotoRing™ rotary table](#) goes 360°, at up to 100 rpm. Thus, these tables not only allow larger angle of wafer alignment, but also complete rotation of the wafer to reduce die transfer time and significantly increase equipment throughput. The large open center architecture allows extraction of every chip die from the pre-cut 300 mm wafer.

### **Accurate Positioning**

Today's mechanical drive technologies used in processing 8" wafers such as gear drive, worm drive and belt all lack positioning stiffness and accuracy. While these characteristics could be tolerated in the past, since it was not until advent of the large semiconductor wafers that an accurate and large rotary table was needed.

The positioning stiffness of the direct drive [RotoRing™ rotary tables](#) allow it to achieve and to maintain arc-sec accuracy even during fast Cartesian (XY) wafer indexing.

The [RotoRing™ rotary tables](#) is essentially a linear motor “curved” to form a ring. There are 16 RotoLinear™ motor modules (up to 24 modules can be installed for higher torque capability) within the ring that forms the motor. Axial placement of these modules along with the planar air bearing system allowed design of the very low profile table.

### **Air Bearings**

Also vital, and the major manufacturing challenges, were the tight tolerances on the axial and radial air bearings that allowed to achieve both axial and radial run-outs well under 10 microns.

### **Application of the RotoRing Rotary Tables in General Automation**

Interest in [RotoRing™ rotary tables](#) is also coming from general automation applications as well, where design engineers can take advantage of the large center opening to access indexed parts both from inside and outside of the ring simultaneously, resulting in smaller foot print and increased productivity.

Source: Intellidrives