

# APEX 85 & APEX 170

## Product Specification

The APEX Systems are versatile, standalone disinfestation and pasteurization systems for loose bulk as well as packaged food commodities, providing a flexible and economical approach to the commodity treatment process.

The RF energy is carefully controlled and monitored to allow even processing of a variety of commodities. The heavy-duty conveyor system will carry the commodities through the processing chamber, allowing the product to be treated safely and reliably. Touchscreen HMI and PLC controls allow the APEX system to be customized to meet the needs of our customers, whether processing packaged or loose bulk commodities. Ziel also offers a range of optional add-ons to complement the system.

### The Solution is APEX

- The APEX systems are specifically designed for the treatment of commodities with lower moisture content
- Long service life with very low maintenance cost
- Designed to deliver optimum power density, minimizing possibility of product damage
- Processing impact can be controlled to maintain sensory characteristics

# APEX 85 & APEX 170 Product Specification Sheet

CATEGORY	APEX 85	APEX 170	COMMENTS
<b>RF Power</b>	85 kW	170 kW	Represents available thermal load for processing
<b>Standard Baseline System</b>	Infeed hopper, metal detector, RF generator(s), product holding and cooling section, chiller for cooling RF generator, PLC, remote monitoring system (EWON) and SCADA		Installation and integration of the chiller and metal detector are customer's responsibility
<b>Optional Equipment</b>	Pre-wet section		Customer will be responsible for and provide other ancillary equipment e.g. the reject system, bucket elevators, hoppers etc.
<b>Product Presentation</b>	Loose bulk products or products that are packaged in select packaging		Poly-woven bags are preferred. Other packaging material may also be acceptable, but will require additional testing & confirmation
<b>Processing Capacity</b>	5000 US tons/year [10 million pounds/year] for almonds	10,000 US tons/year [20 million pounds/year] for almonds	<ul style="list-style-type: none"> <li>Based on 50 weeks of operation per year, 5 days a week &amp; double shift operation</li> <li>Capacity may vary due to physical properties of products and other process parameters</li> </ul>
<b>Demonstrated Disinfection Capability</b>	Process validation (TERP validation) for almonds per Almond Board of California's standards and requirements		Other commodities are also being successfully processed in commercial scale APEX machines
<b>Typical System Dimensions</b>	19.5m x 2.4m x 3.7m	24.0m x 2.4m x 3.7m	Can vary based on specific customer requirements
<b>Operating Environment</b>	Indoor ambient conditions, between 10° C to 40° C		
<b>Electrical Requirements</b>	Power: 370 kVA 480 VAC, 3 Phase, 60 Hz; Voltage must be stable within ±5%	Power: 600 kVA 480 VAC, 3 Phase, 60 Hz; Voltage must be stable within ±5%	Available in various other electrical configurations
<b>Water for Pre-Wet Section</b>	50 liters/hr (max)	100 liters/hr (max)	Clean water, typically from an RO system (not included)
<b>Compressed Air</b>	Requires clean, dry, oil free compressed air at 7 bar (min)		For pneumatic equipment
<b>System Features</b>	Operator interface with user friendly HMI. System controls, monitoring, and integration of ancillary equipment done with PLC		Equipment purchase includes Operator's Training per customer specific Operator's Manual
<b>Life Expectancy</b>	20 years or more for major structural equipment, under nominal operating conditions		When maintained & operated per prescribed operating conditions
<b>FCC Compliance</b>	Adequate EMC shielding; FCC compliant		
<b>FDA Compliance</b>	Complies with regulatory requirements. Food-grade components in all commodity contact areas		
<b>Codes &amp; Standards</b>	System design is consistent with UL standards. Major parts are UL or CE marked		
<b>Cost of Ownership</b>	<ul style="list-style-type: none"> <li>All-inclusive processing cost as low as US 2 cents/lb for almonds</li> <li>Typical time before positive cash-flow is &lt;1 year</li> </ul>		Positive cash-flow is achieved when offsetting third party processing cost
<b>Recipe Development</b>	<ul style="list-style-type: none"> <li>Ziel can help the customer achieve process validation for almonds per Almond Board of California's guidelines</li> <li>Other processes and recipes can be developed to achieve maximum log-kill while retaining product's sensory attributes</li> </ul>		Process validation and recipe development are done under direct supervision of Process Authority available at Ziel
<b>Warranty</b>	Standard one year warranty and free maintenance.		