

Specification LIBS Sorter for Aluminum separation

Item	Description	Quantity
<b>1</b>	<b>QLR-Mnf Sensor Sorter System</b>	<b>1</b>
	Proprietary, <b>6 channel/1 Sensor</b> , Laser Induced Breakdown Spectroscopy (LIBS) based sensor system for the non-destructive identification and separation of wrought and cast Al Scrap. The QLR-Mnf provides years of reliable, fast and accurate measurement for increased yield and purity of sorted product.	
	· <b>Utility Requirements</b>	
	* 240 VAC, 3 phase, 18 kW. Line conditioner recommended (customer supplied)	
	* Compressed Air: 150 CFM @ 125 psi; oil-free, dry air (customer supplied)	
	· <b>System Dimensions (approximate)</b>	
	1200 mm W x 2400 mm H x 5000 mm L	
	· <b>Ambient Requirements</b>	
	- 0 to 40 C	
	- 0 to <80% RH (N/C)	
<b>1.01</b>	<b>Targeted System Performance</b>	<b>1</b>
	The system quoted herein will meet the performance criteria listed below. Note that all performance specifications are contingent upon meeting the stated piece size range, if applicable, and parameter conditions. Final system performance will be determined at the time of installation and processing production material.	
	· <b>Throughput Capacity:</b>	
	0.8 TPH	
	· <b>Piece size range:</b>	
	40-150 mm	
	· <b>System Performance: for example</b>	
	Cast (or Wrought) Extraction Efficiency: >90%	
	Purity of Extract : >95%	
<b>1.02</b>	<b>Spectrometer and Detection System</b>	<b>1</b>
	Single channel crossed Czemy-Turner Spectrometer with robust optics package for maximum stability in industrial applications.	
	· Detector: linear silicon CCD array	
	· Pixels: 2048	
	· Well depth: 62,500	
<b>1.03</b>	<b>Laser Excitation System</b>	<b>1</b>
	The laser is a mJ / kHz, 1064 nm air-cooled laser.	
	· Operable temperature 0-40C	
	· Rated for >1 year of 24/7 continuous operation	
<b>1.04</b>	<b>Operator Interface</b>	<b>1</b>
	Windows® OS industrial Touch-Screen PC - Supervisory protocol and Windows® based analytical software that includes:	

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	· Environment specific hardened electronics cabinet to protect CPU, monitor and other related devices	
	· Control software with Live and Archive display.	
	· Robust, hardened control panel, Hoffman style or equivalent, housing the OS, PLC's, and related electronics.	
<b>1.05</b>	<b>Data Acquisition &amp; Processing Package</b>	<b>1</b>
	· Remote Portal configuration with archiving software	
	· Ethernet connectivity	
	· Solid state 24 VDC output signal for diversion of specified material.	
<b>1.06</b>	<b>System Housing</b>	<b>1</b>
	Carbon steel, rigid frame construction	
	· Safety interlocks	
	· Epoxy painting on all surface parts (additional charge for custom colors)	
	· Maintenance and service access panels	
<b>1.07</b>	<b>Diverter Mechanics</b>	<b>1</b>
	Application specific device consisting of air nozzle bar and manifold assembly	
	· High powered air-jet ejectors, with controller and electronics	
	· Jet pitch of ~10 mm	
	· High performance MAC valves rated at >10 billion cycles	
	· Note: The compressed air supply is not included.	
<b>1.08</b>	<b>Sensor Feeder and Transport</b>	<b>1</b>
	Custom designed, Stage 1 pan feeder system for delivering material at specific feed rates per application.	
	· Custom engineered analytical positioning chute	
	· Piece presence sensor	
<b>1.09</b>	<b>Operation Manual</b>	<b>1</b>
	Easy to understand manual includes:	
	· Theory of operation.	
	· Operating parameter selection and setting.	
	· Control program operation.	
	· Maintenance and servicing.	
	· Troubleshooting.	
<b>1.10</b>	<b>Health &amp; Safety Features</b>	<b>1</b>
	This system, as delivered, will comply with Customer's state and local governing rules and regulations for Laser emitting and electrical devices. Manufacturer and local agent will assist customer in obtaining required approvals for system compliance, if required. The customer is responsible for obtaining appropriate licensing for owning and operating an analytical Laser device. The manufacturer and local agent will provide assistance and guidance in the application process.	
	· Emergency OFF switch	
	· Safety interlocks to interrupt generation of Laser and prevent accidental exposure.	



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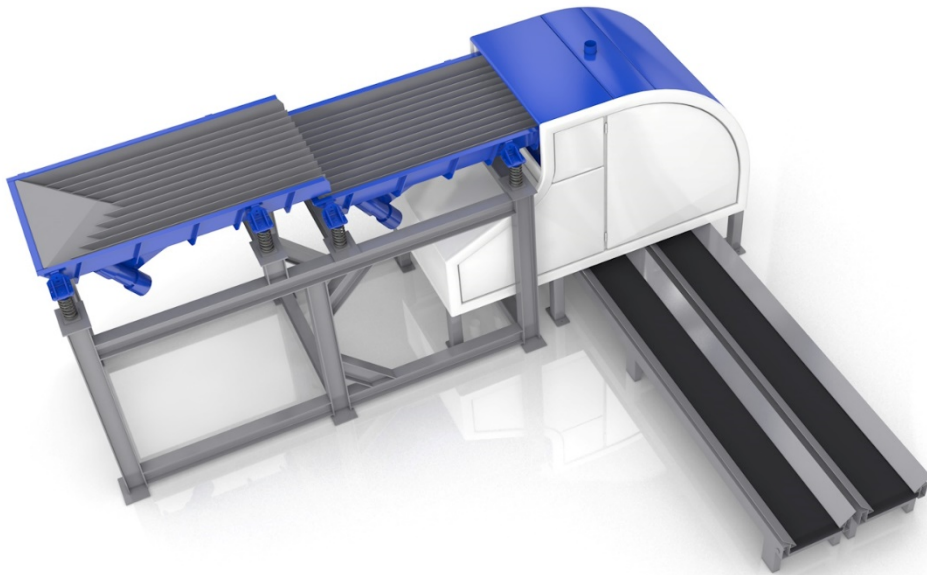
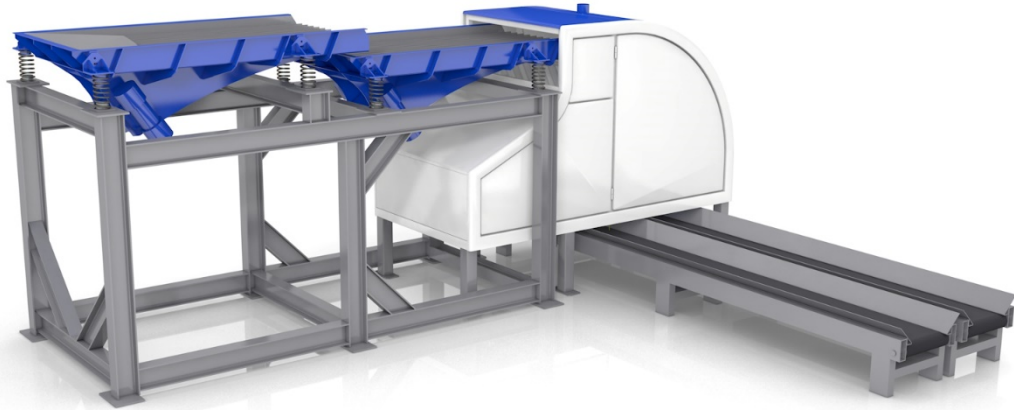
<b>1.11</b>	<b>Warranty</b>	<b>1</b>
	· Parts and labor for 360 days from date of shipment (travel & living expenses included).	
	· Replacement parts, with exception of Lasers and detectors, are warranted for 90 days or the remaining original manufacturer's warranty (whichever is greater). Replacement Laser and detectors are warranted for 180 days, with labor and travel inclusive within the first 90 days.	
	· Software upgrades are complimentary during warranty.	
	· Warranty stipulations: (1) Accessories, upgrades, installation visits purchased after order, but within the coverage period, are not treated as warranty work. (2) Customer pays freight to Austin ; Austin covers freight to the customer when applicable. (3) Flash lamps and photon detector window breakage is not covered, nor any other damage through misuse or abuse.	
	· Extended warranties are available.	
<b>1.12</b>	<b>Installation, Commissioning and Operator Training</b>	<b>1</b>
	Austin AI will install the system at customer site. The system will be final tested for throughput and accuracy criteria per original specifications. Customer may supply ancillary equipment (feeders, hoppers, collection bins...etc..) at this time for complete system check out. Price does not include travel (4 RT flights) and related per diem costs. Time on-site not to exceed 20 days.	
	· Estimated delivery schedule:	
	1. Order receipt:	
	2. FAT: 4 weeks	
	3. In-site installation: 6 months	
	4. Final acceptance: 9 months	
<b>1.13</b>	<b>Shipping, Duties, Insurance, Etc.</b>	<b>1</b>
<b>Item</b>	<b>Description</b>	<b>Quantity</b>
<b>2</b>	<b>Equipment Options</b>	
<b>2.01</b>	<b>Additional Program</b>	<b>1</b>
	Each analytical program is researched and fully tested to meet performance criteria as stated on the quotation document. All testing is done on customer supplied material and may be included in the FAT specification performance test.	
	· Additional Program for example 6000 series extraction.	
	1. Extract 6063/6061 from a Zorba Lights Fraction	
	2. Sortation rate: 0.8 TPH with 1 laser; max 6 laser possible to installr	



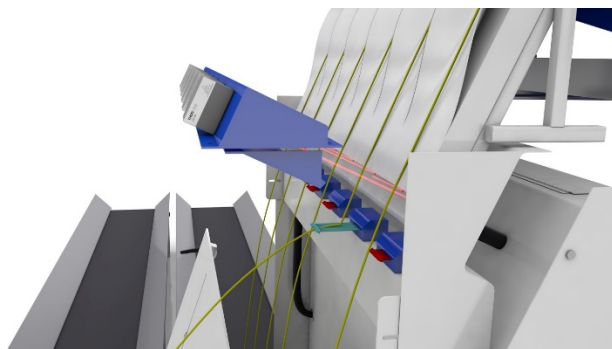
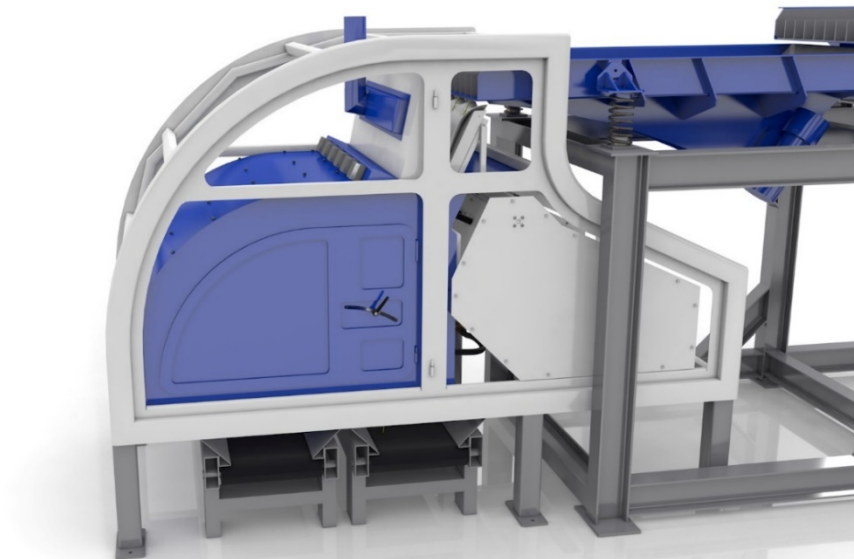
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	3. Extraction efficiency: >90%	
	4. Purity of Extract: >90%	
<b>2.02</b>	<b>Additional Sensors</b>	<b>1</b>
	The system comes complete with the frame and support structure to accommodate incremental sensors up to six total. These can be field retrofittable with minimal interruption and time. Each additional channel will have the same features and benefits as delineated above in this quotation.	
	· Does not include service labor, travel related costs, and per diem.	
	· Warranty period starts at installation for these added components.	
<b>2.03</b>	<b>Extended Warranty Period</b>	<b>1</b>
	Parts and services beyond the warranty period. Per annum charge in advance commencing on the expiration date of the preceding warranty period. If one year extended warranty is purchased at the time of the system order placement, the Ready Replacement Service will be included in initial warranty.	
	· Internet or modem support in real-time for trouble-shooting and application support	
	· <u>Laser Ready Replacement Service</u>	
	· Factory storage of one complete set of spares and critical components	
	· <24 hour response--workweek only.	
	· Per diem and travel not included	
<b>2.04</b>	<b>Spares Kit</b>	<b>1</b>
	All parts deemed to be required for routine and preventative maintenance of the system.	
	· Includes hard to get parts or long lead items. Thus ensuring minimal down times.	

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