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Eliminating the challenges in aluminium wheel scrap sortation with Austin AI's automated LIBS sensor sorter system

Aluminium is a light-weight material. That feature is substantially beneficial in today's innovations, especially

when considering electric vehicles. It greatly improves the vehicle's fuel consumption efficiency, a priority in many

aspects of the worldwide decarbonization efforts. This is why aluminium is a highly preferable material nowadays in the automotive industry.

The automotive industry is a rapidly expanding sector where, besides continuous innovations and manufacturing, a large number of vehicles reach the end of their lives. In 2022, this number was 4.7 million, just in the European Union (Eurostat). Without recycling, valuable materials, like aluminium wheels, end up in landfills.

Car wheels are a significant part of the total weight of Al-dominant cars. They historically can be made from Fe, Mg, and wrought Al alloys. However, the number one constituent in automotive wheels is cast Al-based material. Cast Al wheels can vary in Si content from 5% up to 15%. This variation makes the recycling process expensive as the addition of, or dilution using lower concentration Si additives, requires a lot of incremental furnace time. Austin Al's patented automated LIBS-based sensor sorter, the

World's first automated LIBS-based sensor sorter for used automotive wheels, has solved this issue.

Make no mistake about the power of LIBS as an analytical tool. This technology is far superior to other sorting techniques such as X-ray (transmission or fluorescence), colour sorting, or others when considering sensitivity and timing. The sorting process can be quite stringent. For example, some users have requirements beyond the Si content, such as very low Fe at $\pm 0.15\%$ and Cu at $\pm 0.10\%$. When you imagine the wheels moving along on a conveyor, for most applications using LIBS, this is a very impressive statement with regard to the latest advancement of the art.

Following analysis, the wheels are accelerated to the diversion stage. Here, based upon the user's requirements, wheels are diverted into one or more outputs or allowed to pass as per the client's specifications. Used whole car wheels, thus sorted, are capable of directly

entering the secondary furnace in-feed or the wheel shredder and then, providing homogeneous alloy fractions - ready to melt.

model, the 6-lane/6-sensor configured, chute-type sensor sorter system is the ideal tool.



More and more companies require aluminium wheel scrap.

The Austin AI LIBS-based sensor sorter, a special tool designed for used automotive wheels operates at higher than 10 tonnes/hour capacity.

For those who recycle shredded wheel scrap - or any shredded mixed metal scrap- our flagship

Let me mention a few features, unique to Austin AI's patented, 6-lane/6-sensor LIBS system:

1. High throughput: 4-5++ TPH typically for mid-cut material, depending on the infeed.
2. Pieces hit the laser in a singular distribution (extra low rate of overlapping pieces)



3. Robust design with few moving parts
 4. No individual focusing of laser on parts
 5. Laser module on when running—no turning on and off
 6. High Sensitivity (Real analytics - no Artificial Intelligence):
 - Proven to sort <0.1% Mn, <0.15% Fe, and low Cu and Zn for example
 - Great Mg extraction purity
 - Many intra-class sorts in 6xxx, 5xxx, and 3xxx, for
 7. Low cost of operation: 2c\$/pound fully loaded cost.
- example (unique: A356, 6061, 6063, 5052, 5454, etc. sortation of any specific alloy composition is supported)
- Thanks to our patented design, we offer the highest purity and high throughput on the market, and we take pride in having the most users worldwide.
- By using any model of Austin AI's automated LIBS sensor sorter systems, recyclers have the

opportunity to recover high-purity aluminium alloys, maximising the economic value of recycled materials. Also, the automation and precision of the system lead to lower operational costs and higher profitability for recycling facilities.

We can't forget about the environmental advantages either. Aluminium recycling requires 95% less energy demand than primary production and lowers greenhouse gas emissions, creating the possibility for enhancing the circular economy in the aluminium industry, which

results in a healthy environment.

Our goal is to further expand the knowledge and importance of recycling and the advantages of specific alloy sortation in the automotive industry and to provide innovative technology to ease the difficulties in the sorting process, which ultimately leads to a greener and more sustainable future.

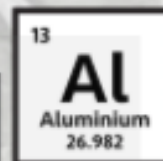
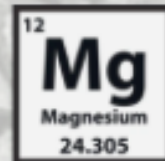
Reach circular economy and green aluminium with Austin AI Europe's LIBS sensor sorter system!

Performance - TPH, purity, efficiency, PSR

	What we claim in general	Where it can go	What some customers do
PSR median	80 mm*	>>80 mm	>>80 mm
Type of infeed	Wrought	Cast/Zorba	profile
Purity of extract	>>95%	Always >>95%	100%
Extraction efficiency	>>85%	customers' choice	~93%
Throughput (TPH)	> 4.0	Up to 10	~5.0

* Piece Size Range is ~ 40mm-140mm





LIBS

SPECTROSCOPY BASED SENSOR SORTERS

Ask for more!

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