

# CLARITY LIBS

LASER INDUCED BREAKDOWN SPECTROSCOPY SORTING

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## CLARITY LIBS FROM BINDER+CO: HOW IT WORKS

LIBS (abbreviation for "laser induced break down spectroscopy") is a destruction-free method for analysing the chemical composition of a specimen. Fused with a **VIS-Camera** system, **CLARITY LIBS combines** this sensing technology in an **automated sorting machine**.

The result is a compact and flexible sorting machine, enabling the customer to sort automatically metal scrap into **base metals fractions** (e.g. aluminum, copper, magnesia, etc.) or to further process pre-concentrated fractions into **alloy classes and subclasses** (e.g.: cast-aluminium from wrought, sorting wrought fraction into 3xxx, 5xxx, or 6xxx; sorting stainless steel into V2A and V4A).

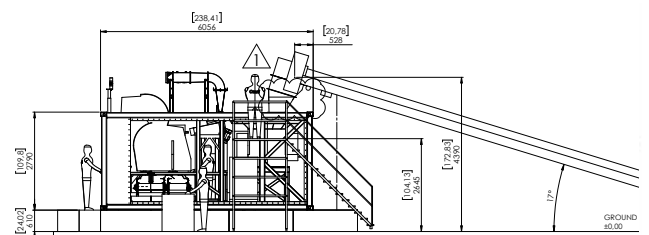
The concept is based on the proven technology of a chute sorter, upgraded with an inline lane conveying system. The LIBS sensing equipment is installed beneath the chute, analysing the passing particles through a small opening. This design makes the installation of a mechanical autofocus system obsolete, decreasing costs and **tremendously increasing durability**. The included ablation laser ensures that not only post-production scrap, but also post-consumer scrap can be analysed. Each passing particle is analysed by its **optical properties and chemical composition**. The flexible systems enables

the user to create an **individual decision tree** for any application based on the gathered information. Depending on the setting each particle is assigned to a material class (e.g. 6xxx,..). After classification, an air jet system diverts the particles in the sorting chamber into the corresponding output channel. Optionally, it is possible to have two banks of air jets, opposing each other, and two deflector plates. This **crossfiring design** enables the CLARITY LIBS sorting machine **to produce three products in one run**.

Additionally, the possibility of splitting the machine allows the customer to perform even two different sorting tasks simultaneously on the same machine, hence make it possible to produce five (refeed) / six (fresh feed) products with one machine at once.

Due to its **compact machine design**, CLARITY LIBS fits easily into facility, even if little space is available, making it perfect for upgrading an existing sorting line.

CLARITY LIBS is also available in a semimobile **20 feet container version**, which includes the feeding system (helical bowl feeder). This gives the customer the possibility to **shift the sorting unit around** in the plant and even transport it easily to **another recycling facility** if needed.



Binder+Co, Grazer Straße 19-25, 8200 Gleisdorf, Austria, Tel.: +43-3112-800-0\*, office@binder-co.at, www.binder-co.com



RELIABLE  
CRUSHING



EFFICIENT  
SCREENING



WET  
PROCESSING



THERMAL  
PROCESSING



SENSOR BASED  
SORTING

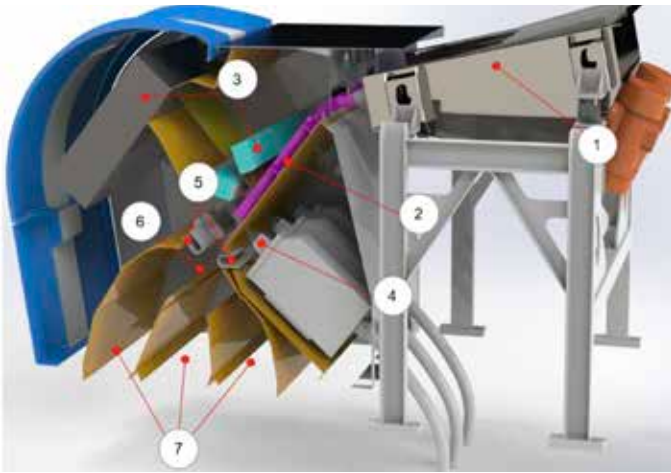


BAGGING  
PALLETIZING

# CLARITY LIBS

## LASER INDUCED BREAKDOWN SPECTROSCOPY SORTING

### CONCEPT CLARITY LIBS



- 1 Vibratory (triple) lane feeder
- 2 Lane half pipe chutes
- 3 Optical camera and illumination
- 4 LIBS-System: ablation and sensor
- 5 Opposing air jets ("crossfire")
- 6 Sorting chamber with deflector plates
- 7 Triple product outlets

### APPLICATION EXAMPLE CAST ALU FROM WROUGHT ALU



cast Alu



wrought Alu

### DIMENSIONS AND TECHNICAL DATA

Technical data	Chute sorter	Container-version
Available number of lanes	1 (upgradable to 3) or 3	
Available number of product outlets	2 or 3 / 5 or 6	
Length [mm] x width [mm] x height [mm]	1,300 x 1,700 x 1,400	~6,100 x 2,500 x 2,800
Weight [kg]	1,200	8,500
Installed electrical power [kW]	~4.5	15
Typical through put rates [kg/(h x lane)]	Up to 750*	

\*The expressed throughput rates were observed for TWITCH 25-120 mm, with around 10% cast and 30% 6xxx. Differences in the composition and other factors may alter the result

