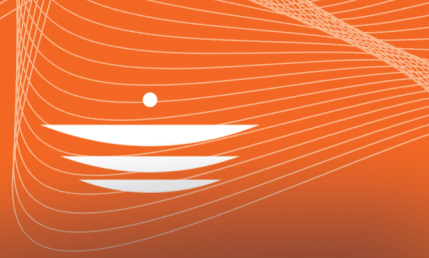


Acoustic Sorting

With WaveSort



Problem & Opportunity

Industrial sorting systems still rely on pneumatic air jets: a decades-old technology that limits performance and efficiency. These systems are inherently binary, energy-intensive, and prone to clogging, wear, and maintenance downtime.

As optical sensing has advanced, a critical gap has emerged: precise detection is now constrained by imprecise mechanical actuation. This leads to unnecessary waste, especially in high-value materials.

The result: lost yield, high operating costs, and limited flexibility in an increasingly demanding market.

Value, Traction & Deployment

WaveSort delivers a step-change in performance and economics:

- Up to 5× lower energy consumption
- Lower maintenance costs
- Higher yield through reduced wastage and damage
- 200–1,000 items/sec throughput

The system is designed as a drop-in module for existing machines, enabling rapid adoption via retrofit or OEM integration.

Backed by research at top universities and validated in some of the world's most prestigious journals, the technology has demonstrated millimetre-scale precision and high-throughput sorting under real-world conditions.

Solution: Acoustic Sorting

WaveSort replaces pneumatic ejection with a patented ultrasonic phased array system that enables contactless, real-time manipulation of objects using sound.

By generating dynamic acoustic pressure fields, the system works alongside state-of-the-art optical systems to redirect items in mid-air with no moving parts and no physical contact.

This enables: multi-bin sorting (beyond binary), high precision, and dynamic control with up to 40,000 updates per second.



WaveSort

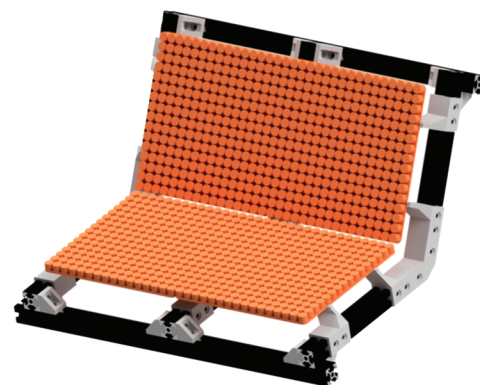
Technical Data

Update Rate	Hz	10,000
Max Pressure Output	Pa	3,500
Power Draw	W	30
Loudness	dB	55
Operating Frequency	Hz	40,000
Max Input Voltage	V	20
Optimal Particle Size	mm	8.6
Operating Range	cm	2 - 20
Optimal Range	cm	12
Product Mass	kg	1.52
Control Protocol		USB-C/Custom
Number of Transducers		256

Dimensions

Depth	mm	60
Width	mm	195
Length	mm	195

Pilot programmes are available for early partners



Acoustofab's WaveSort is a modular system for ejecting small particles in sorting environments. Designed for integration into existing machines, it can complement or replace compressed air ejectors and is suitable for free-fall or conveyor-end sorting.

Powered by ultrasound, the device is quiet and robust. Unlike traditional systems that operate in 2D, it enables sorting across a 3D volume. With no moving parts, it requires minimal maintenance, and multiple 16×16 transducer modules can be combined for setups of different scales.

Adjustable ejection pressure allows non-binary sorting into up to five categories. An on-board FPGA manages processing, making integration straightforward, requiring only the transmission of ejection times and locations.