INDUSTRY BRIEF

Recycling

One cell learns to pick and sort the endless variety moving down a recovery line, reconfiguring in software per stream.

Recovery streams arrive unstructured and unpredictable. A single conveyor carries crushed bottles, tangled film, shredded fiber, and contaminants in no fixed pose or order. The material mix shifts hour to hour and never repeats. The picking line is dirty, loud, and hazardous, and it runs on manual labor that turns over constantly. These are the tasks fixed sorters and optical-only systems leave on the belt.

Relling puts a vision system on the stream that identifies material by type, shape, and condition, then a single cell picks the targeted items at line speed. Reconfigure it in software per stream, per shift, or per commodity, with no retooling. The same cell handles positive sort, contaminant pull, and disassembly by loading different skills. Every cell is qualified at Relling HQ before it ships, then tuned on-site.

AT A GLANCE

Footprint	~2 × 2 m
Payload	12.5 kg
Reach	1.3 m
Placement	±0.05 mm
Power	Single-phase
Install	≤ 2 weeks

01 The work we take on

THE TASK PROFILE

A

Unstructured streams

Material arrives in random poses, overlapping and partially buried on a moving belt, with no fixturing and no two frames ever alike.

B

Infinite variety

The object set is effectively unbounded: every brand, package, and broken fragment is a new shape the cell must recognize and grasp on sight.

C

Dirty and hazardous

Dust, sharps, fluids, and shifting loads make the line dangerous for people and punishing for equipment, demanding rugged, washdown-tolerant hardware.

D

Variable condition

Items are crushed, torn, soiled, or labeled over, so identity must be inferred from partial and degraded cues rather than clean references.

E

Speed under load

The belt does not stop; perception, decision, and grasp must close within a narrow window as material flows continuously past the cell.

02 Why now

THE CASE FOR MOVING NOW

Picking lines can't hold labor

Manual sorting is dirty, repetitive, and dangerous, and turnover on the line runs extreme. Seats sit empty, recovery rates slip, and a cell that picks every shift without churn keeps the stream moving.

Safety off the belt

Sorters reach into a stream of sharps, fluids, and unknown contents at speed. Moving people back from that hazard cuts injury exposure while holding throughput the line was sized for.

Clean streams pay

Diversion mandates rise while buyers pay for purity; a percentage point of contaminant decides a bale's price. Consistent perception-driven sort lifts grade and turns recovered material into a higher-value commodity.

OEMS WE WORK WITH

BECKHOFF · Rockwell Automation · SIEMENS · FANUC · KUKA · ABB · YASKAWA

03 What we automate in recycling

TASKS ON THE LINE

A — Positive sort
Pick target PET, HDPE, aluminum, or fiber off the belt into the correct stream.

B — Contaminant removal
Pull rejects and off-spec material out of an otherwise clean recovered stream.

C — E-waste disassembly
Separate components from devices and route boards, metals, and plastics by type.

D — Film and bag removal
Lift loose film, wrap, and bags that foul screens and jam downstream equipment.

E — Color sorting
Divide containers by resin color to lift bale grade and commodity value.

F — Bale quality control
Inspect outgoing bales and remove stray contaminants before they are baled.

G — Infeed metering
Meter material onto the line at a steady rate to keep pickers evenly loaded.

H — Palletizing
Stack sorted bales and bins onto pallets for shipment off the floor.

WHAT A CELL HOLDS

≤ 2 wk	±0.05 mm	100%
Install to running on your floor, not months of integration	In-hand placement for fit- and safety-critical parts	Inspection on every part — checked, not sampled

Representative configuration. Final specs are issued with the proposal.

04 Working with us

FROM YOUR PART TO A QUALIFIED CELL, IN ~TWO WEEKS ON-SITE

A · SCOPE & PO

We start with your part

We work from your part, volumes, takt, and the line you'd deploy on. A short scoping engagement confirms fit, defines acceptance criteria, and puts a fixed scope and price in writing — capital purchase and robotics-as-a-service, side by side.

B · PRE-BUILD AT RELLING HQ

We build & qualify it first

We build the cell on our own production floor and run it against your parts until it meets the acceptance criteria. The trial-and-error happens here, not on your line — so what ships is already proven.

C · ON-SITE CONFIGURATION

It arrives pre-built

The qualified cell shows up ready. On-site work is tuning, not assembly: under two weeks to integrate with your line, MES/ERP, and safety, followed by a supervised run on real product.

D · ACCEPTANCE & FIRST UNIT

Proven, then handed over

We run supervised until your safety engineer signs off and the cell hits its numbers. Your technicians operate it day to day; maintenance and software updates are covered.

05 Let's talk

We started Relling to help this country make more of what it needs. If you have a task that's hard to staff or hard to automate, send it over — we'll tell you straight whether a cell fits, and scope it if it does.

Talk to us: jai.relan@rellingsystems.com · rellingsystems.com

EXCEPTIONAL ENGINEERING, TEAM FROM

SPACEX · NASA · BOEING · TESLA · RIVIAN · ANYSIGNAL · coinbase