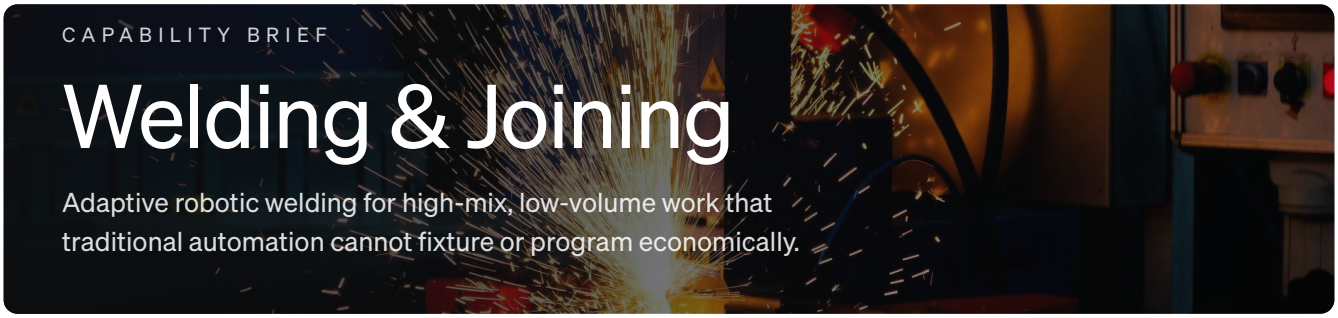

CAPABILITY BRIEF

Welding & Joining

Adaptive robotic welding for high-mix, low-volume work that traditional automation cannot fixture or program economically.

Skilled welders are retiring faster than they can be replaced, and the shortage is acute on the high-mix, contact-rich work that defines most job shops. Traditional robotic welding answers a different problem. It needs precise fixturing and dedicated programming for every part, costs that only amortize across long runs. For low-volume jobs with frequent changeovers, that fixed cost never pays back.

A Relling cell finds the seam with vision, then adapts in real time to fit-up, gap variation, and part-to-part inconsistency instead of demanding rigid fixtures. Switching to a new part is a software reconfiguration, not a retooling project. Each weld skill is qualified against samples at Relling HQ before the cell ships, then tuned to your parts and procedures 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

Vision seam finding

Cameras locate the joint and track it through the weld, correcting for part placement, thermal distortion, and fixture drift without taught waypoints.

B

Fit-up adaptation

The cell reads actual gap and joint geometry and adjusts travel speed, weave, and wire feed to bridge variation that would defeat a fixed program.

C

Software reconfiguration

A new part number loads as a new skill, not a new workcell; no custom fixtures or robot reprogramming between short runs.

D

Procedure control

Voltage, current, travel, and heat input hold to qualified parameters per joint, keeping welds inside spec across operators and shifts.

E

Inline traceability

Each weld is logged with its parameters and vision record, producing a per-part quality trail for inspection and audit.

02 Why now

THE CASE FOR MOVING NOW

The welder shortage is structural

Tens of thousands of welding jobs go unfilled each year as the trade ages out, and training pipelines cannot close the gap. Automating routine welds lets scarce welders focus on the work that genuinely needs their hands.

High-mix economics changed

Short runs and frequent changeovers used to rule out robotic welding because fixturing and programming never amortized. A cell that reconfigures in software makes automation pay back on lot sizes that were uneconomic before.

Consistency and reshoring

Adaptive welding holds qualified parameters weld after weld, with a traceable record per part. That repeatable quality, deployed in weeks, is what makes bringing high-mix fabrication back onshore defensible.

OEMS WE WORK WITH

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

03 What the service covers

TASKS ON THE LINE

A — MIG/MAG welding
Gas-metal arc welds on steel and aluminum assemblies across varied joint configurations.

B — TIG welding
Precision gas-tungsten arc welds on thin-gauge and high-spec stainless and aluminum parts.

C — Tack welding
Locating and placing tacks to fixture assemblies before full welding or downstream joining.

D — Spot welding
Resistance spot welds on sheet-metal panels and brackets at programmed weld schedules.

E — Seam tracking
Following curved and irregular seams in real time as geometry shifts under heat.

F — Multi-pass welds
Filling heavy joints with sequenced root, fill, and cap passes on thick sections.

G — Fixture-light welding
Welding loosely located parts using vision instead of dedicated hard tooling.

H — Weld inspection
Vision-checking bead placement, length, and continuity, flagging defects for rework.

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