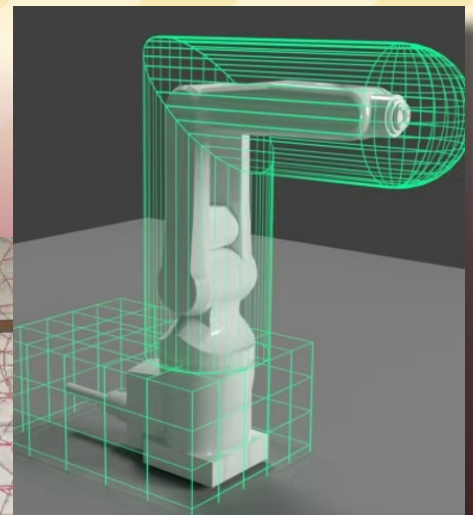
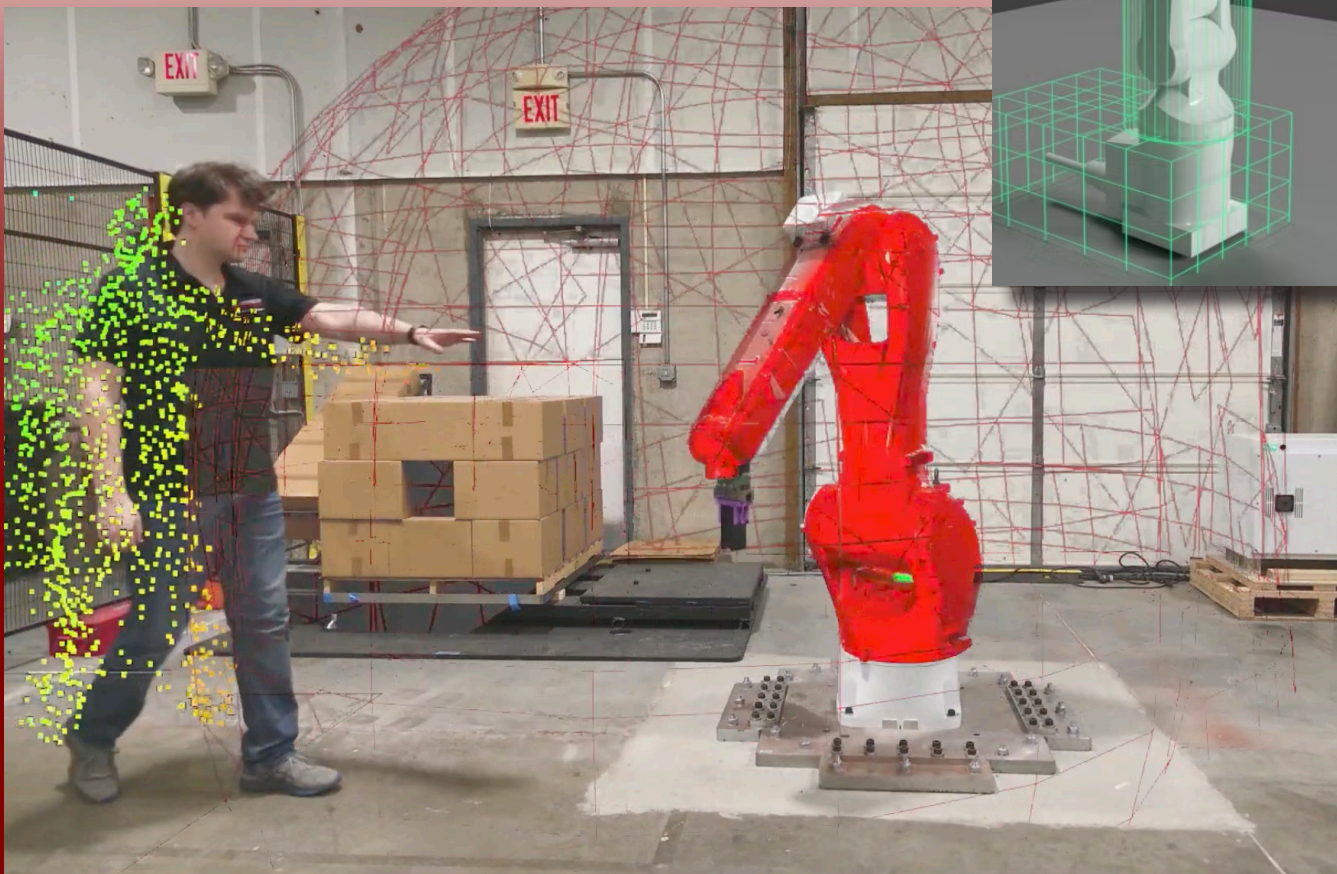




# INTRODUCING THE SR1 ADVANCED 3D SAFETY SYSTEM

3D | SIL3 | CAT2 | PLD | VISION SAFETY SYSTEM



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## **SR-1 Climate and Sustainability Benefits**

### **1. Less scrap and rework (material and energy savings)**

By making human-robot collaboration safer and more flexible, SR-1 lets factories:

- Keep robots running at optimal speeds instead of over-slowng or over-guarding them.
- Run more stable, repeatable processes with fewer human-caused interruptions or manual workarounds.
- Reduce scrap and rework because the process is more consistent, which cuts raw material waste, energy used to re-run bad parts, and upstream and downstream transport, handling, and packaging.

Every scrapped part carries embedded energy and carbon from the full supply chain. Fewer bad parts mean lower embodied emissions per good part produced.

### **2. Higher overall equipment effectiveness (OEE) at lower energy per unit**

SR-1 improves OEE without adding more hardware by improving availability, performance, and quality:

- Availability: Dynamic safe zones reduce unplanned stops and manual lockouts.
- Performance: Robots can run closer to their engineered cycle times instead of being permanently slowed for a worst-case human scenario.
- Quality: More stable automated processes usually produce tighter tolerances and fewer rejects.

If a line can produce more good parts per kWh, the energy and carbon intensity per unit drops, even if total energy use is similar or slightly higher.

### **3. Enabling fenceless and flexible cells (longer asset life, less rebuild waste)**

Traditional hard-guarded cells:

- Are expensive and material heavy (steel fencing, guarding, platforms).
- Get scrapped or heavily rebuilt when the line changes.
- Lock in a single product or process for years.

With SR-1:

- Cells can be reconfigured with software and sensor repositioning instead of cutting, scrapping, and rebuilding steel.
- The same robot cell can support multiple SKUs or process layouts over its life.

The SR-1 delivers a rapid and superior ROI over traditional hard-guarding and light curtain setups by **eliminating physical barriers, enabling flexible automation, and maximizing machine uptime**, all while ensuring **certifiable safety** in complex, dynamic environments.

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## Traditional Safety (Baseline Comparison):

- **Hard guards, fencing, and interlocks:** ~\$20K–\$40K per cell (not including floor space costs)
  - **Light curtains/scanners:** Additional \$10K–\$25K per cell
  - **Fixed layouts:** Costly to reconfigure (engineering, downtime)
  - **Safety + productivity tradeoff:** Cannot allow human-robot coexistence without interrupting production
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## SR-1 ROI Advantages:

### 1. Increased Uptime = Revenue

- **No unnecessary stops:** Unlike traditional systems that stop on entry, SR-1 intelligently differentiates people vs objects and enforces protective zones dynamically.
- **Faster resets:** No need to clear fences or open gates.
- **Estimated gain:** +5–10% cell uptime = \$25K–\$50K annual productivity boost (depending on application)

### 2. More Floor Space Saved = Cost Avoided

- **No fences** means tighter cell design and better floor utilization.
- **Avoided cost** of 50–150 ft<sup>2</sup> per cell @ ~\$100–\$300/ft<sup>2</sup> (real estate, opportunity cost)
- **Reconfigurable cells:** No rip-and-replace every time the line changes = future-proofing automation

### 3. Lower Engineering & Maintenance Overhead

- Traditional guarding requires:
  - Custom design, mechanical install
  - Regular maintenance, safety validation



## SR-1: A story about safer, faster factories

Most everyone has seen factories where steel fences and bright yellow scanners set the rules. If a person stepped past a line, the robot stopped. Production stopped too. We accepted that tradeoff because safety matters. Then labor got tight, costs went up, and a lot of work left the United States. The common belief was simple, if you want to build here, you have to give up speed or spend a fortune rebuilding cells.

SR-1 breaks that thinking.

Picture a standard robot cell on your floor. No redesign. No new robot. You mount SR-1. It creates a live 3D picture of the space and knows the difference between a person and everything else. When a person gets too close, the robot slows or pauses. When the space clears, the robot returns to work. People stay safe. The cell keeps producing.

That is the heart of SR-1. Safety first, productivity always.

Now think about what that means for you.

- You can retrofit existing cells, so you use the assets you already own.
- You remove fences in many applications, so you reclaim floor space.
- You reduce unplanned stops, so throughput rises without hiring a dozen more operators.
- You make the cell easier to maintain, so uptime improves.
- You give safety teams real data, so compliance conversations get faster.

SR-1 changes the daily rhythm on the floor. Operators approach a cell with confidence. Maintenance can access the robot without a maze of gates. Supervisors see fewer blocked aisles and more flexible layouts. Finance sees higher output per square foot. HR sees safer jobs that are easier to staff.

Here is how it plays out over a shift.

- First hour, setup clears faster because the cell is open and accessible.
- Mid-morning, an associate steps in to clear a part. SR-1 detects the person, signals a safe slow or stop, the part is cleared, and the robot resumes. No drama, no lockouts, no waiting for someone with a key.
- After lunch, a changeover that used to require opening fences now happens in minutes.
- By the end of the day, you shipped more with the same team and the same robots.

What about compliance and audits. SR-1 was built to meet functional safety requirements for industrial robots, and our design has already achieved PLd Category 3 design sign-off by UL. For you, that means a safety case you can defend and a path to scale across sites. Add SR-Insight



## SR-1: Smarter Safety. Faster Production. No Fences.

Break free from outdated safety systems.

SR-1 delivers certified 3D vision-based safeguarding that enables fenceless automation, improves cycle times, and unlocks flexible, efficient workcell design.

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### Cell Design Optimization

Remove physical guarding to reclaim space.

Easy integration with new or existing cells.

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### Operational Efficiency

Cuts capital and maintenance costs.

Ready for evolving production and mobile robotics.

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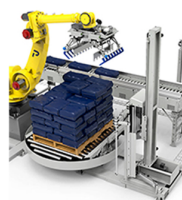
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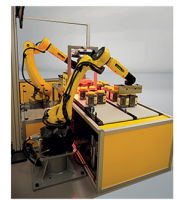
Trailer Operations



Machine Tending



Palletizing & Depalletizing

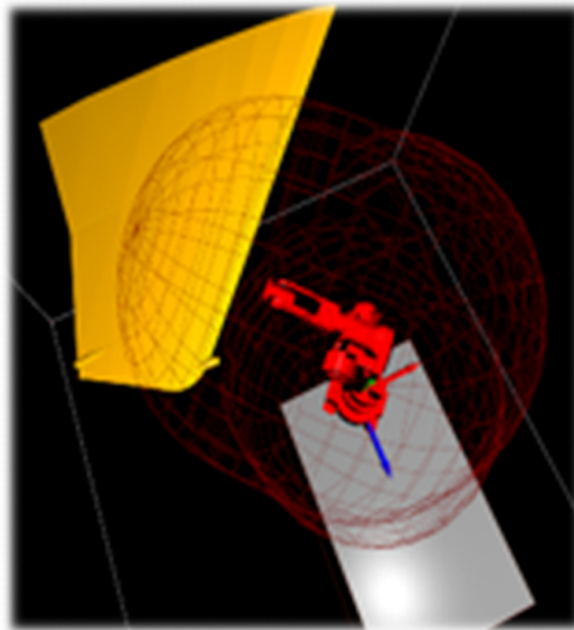


Fenceless

### 3D Vision-Based Safeguarding

Distinguishes humans, AMRs, AGVs, and static objects.

Full 3D coverage — no blind spots.



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### Improved Cycle Time

Reduces false stops and downtime.

Maintains safe, faster cycle speeds.

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### Advanced Safety

Certified to ISO EN 13849-1, PLd.

Adaptive response slows or stops robots based on proximity.

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# Safety in a New Dimension

## Unlock the Power of SR-Insight: Unmatched Safety and Productivity Tool

SR-Insight turns SR-1 safety data into a live control layer for your cells. It continuously compares real-time behavior against the approved risk assessment (RA), flags violations or RA drift, and surfaces a clear dashboard of safety and productivity metrics. Teams see exactly what caused stops, slows, E-stops, human intrusions, and sensor obstructions—then drill down by time, station, and cause to fix issues fast. Cross-cell benchmarking highlights best performers and outliers. Auditor-ready logs support compliance reviews and line changes. SR-Insight scales with every SR-1 system as a subscription add-on and can feed plant MES/BI tools via API.

- Ingests SR-1 event streams from each cell
- Maps events to the cell's approved RA and thresholds
- Flags out-of-policy behavior and RA invalidation risks
- Delivers dashboards, alerts, and reports to ops, safety, and quality
- Potential insurance benefits depend on carrier acceptance and customer adoption.

### SR-Insight Benefits

**Safety & compliance.** Continuously compares live cell behavior to the approved risk assessment, flags out-of-policy behavior and RA drift, and produces auditor-ready logs for reviews and change control.

**Throughput & quality.** Pinpoints the exact causes of stops, slows, E-stops, and intrusions, validates changeovers before ramp, and helps prevent repeat hits to protect takt time.

**Cost & risk.** Cuts diagnosis time and unplanned downtime, highlights training and process fixes, and creates a pathway to lower risk and possible insurance savings.

**Operations & IT.** Scales as a subscription add-on to each SR-1, delivers role-based dashboards for supervisors and safety, and integrates with Robot Safety Center via secure APIs.

**Performance insight.** Visualizes stop/slow/E-stop time, human intrusions, and sensor obstructions with cross-cell benchmarking and time-to-recover trends to spread best practices.the work process smooth.



# Safety in a New Dimension

## Unlock the Power of SR-1: Unmatched Safety and Efficiency

Discover the unmatched safety provided by the SR-1. With a safety design that aligns with UL compliance standards and Self-Certification according to EN13849-1, PLd, Category 3, the SR-1 sets a new standard for safety. Our TUV Nord CMSE Risk Assessment on file further underscores our dedication to safety. Through its sophisticated worker detection capabilities, it ensures the utmost level of protection in hazardous areas, elevating the concept of safety in a collaborative environment to a whole new level.

Seamless integration is at your fingertips with the SR-1. Interface this exceptional solution effortlessly with any industrial safety relay, controller, or PLC using redundant relay or transistor outputs. It seamlessly integrates into your existing safety infrastructure, with validation and monitoring handled by the system integrator.

Powered by cutting-edge 3D stereoscopic sensing technology, the SR-1 offers advanced detection capabilities. It detects objects as small as 2"/50mm in diameter, even at high speeds of up to 2000mm/sec or greater. Enjoy comprehensive safety coverage and precise intrusion detection like never before.

The SR-1's enhanced responsiveness is a game-changer. With a rapid reaction time of just 120 to 300ms, it enables quick intervention and optimal worker safety. Expand the system effortlessly with up to 8 sensors and take advantage of its daisy chain functionality, providing unparalleled flexibility and scalability to meet your evolving needs.

### SR-1 Benefits

#### Intelligent 3D Monitoring

Live Point Cloud technology adapts safety zones to dynamic movement.

#### 3D Human Detection

Advanced 3D Time-of-Flight sensing provides complete protection, immediately detecting human presence.

#### Flexible Automation Safety

Ideal for collaborative cells featuring robots, AMRs, and human workers in complex production scenarios.

#### Scalable and Versatile Coverage

SR-1 scales effortlessly, covering extensive production spaces and multi-robot cells.

#### Seamless Integration

Seamless integration into existing automation setups, reducing downtime and operational disruptions.

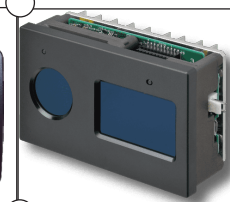
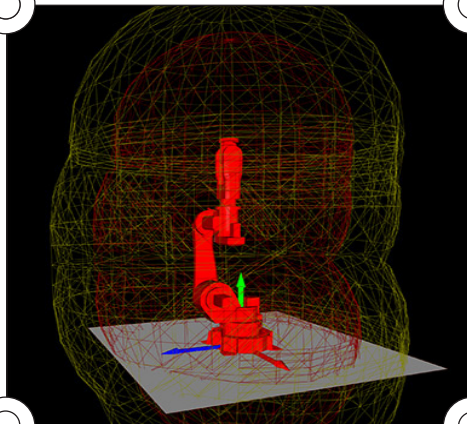
#### Uncompromised Productivity

Intelligently monitors robot speed and movement, ensuring optimal efficiency and safety simultaneously.



# SR-1: 3D Safety System

The SR-1 boasts state-of-the-art 3D sensing capabilities that enable it to distinguish between various objects in its vicinity. It can identify static obstacles, personnel, and machinery, all while differentiating between non-hazardous AMRs, AGVs, and Mobile Forks. This selective recognition is the cornerstone of its advanced safety protocol. **The SR-1 is a new dimension in machine safety.**







# Frequently Asked Questions

<b>Who is the SR-1 designed for?</b>	SR-1 is designed for automation teams seeking to eliminate traditional safety barriers without compromising protection. Whether you're working with industrial robots, collaborative robots, or mobile robots (AMRs/AGVs), the SR-1 delivers certified safety and total human detection coverage—even in complex, dynamic environments.
<b>What safety standards does the SR-1 adhere to?</b>	The SR-1 is developed in accordance with ISO 13849-1 Performance Level d (PLd). This ensures compliance with global safety requirements for industrial automation and robotic systems, giving your team confidence in both regulatory adherence and practical risk reduction.
<b>How does the SR-1 enhance workplace safety?</b>	Unlike legacy safety systems like light curtains or area scanners, SR-1 uses proprietary 3D sensing and advanced algorithms to create a complete protective field around work zones. It detects humans in near real time, minimizes false stops, and allows for maximum operational speed—empowering higher productivity without sacrificing safety.
<b>Can the SR-1 be seamlessly integrated into existing setups?</b>	Yes. The SR-1 is engineered for easy retrofitting or integration into both new and legacy automation cells. Its flexible architecture supports various robot types, mobile platforms, and multi-zone configurations, allowing you to modernize safety without extensive re-engineering.
<b>What benefits does the SR-1 offer in terms of efficiency?</b>	The SR-1 increases productivity by eliminating the need for restrictive safety fencing and minimizing unnecessary system stops. Its compact hardware, fast response times, and precision detection reduce downtime and maximize floor space—all while providing peace of mind that your team is fully protected.
<b>How does the SR-1 support flexible scaling?</b>	A single SR-1 system supports up to eight sensors or multiple systems connected via a simple daisy-chain configuration, allowing you to expand coverage as your cell grows or as new equipment is added. This modularity saves engineering hours and reduces the total cost of ownership as your operations evolve.
<b>How does the SR-1 streamline work cell planning?</b>	The SR-1's user interface and sensor network simplify layout design, enabling faster deployment and easier adjustments over time. Its intelligent zoning and near real-time monitoring reduce the complexity typically associated with safeguarding collaborative and dynamic robotic applications.
<b>Why should I choose the SR-1 for my business?</b>	The SR-1 is more than a safety system—it's a strategic enabler of next-generation automation. By providing total human detection, eliminating physical barriers, and maintaining productivity, it helps forward-thinking businesses achieve truly flexible, efficient, and safe operations.
<b>Where can I learn more about the SR-1 and its applications?</b>	To explore the full potential of the SR-1 and discover how it can revolutionize your automation and robotics safety, visit our website: <a href="http://www.sensoryrobotics.com">www.sensoryrobotics.com</a> .



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