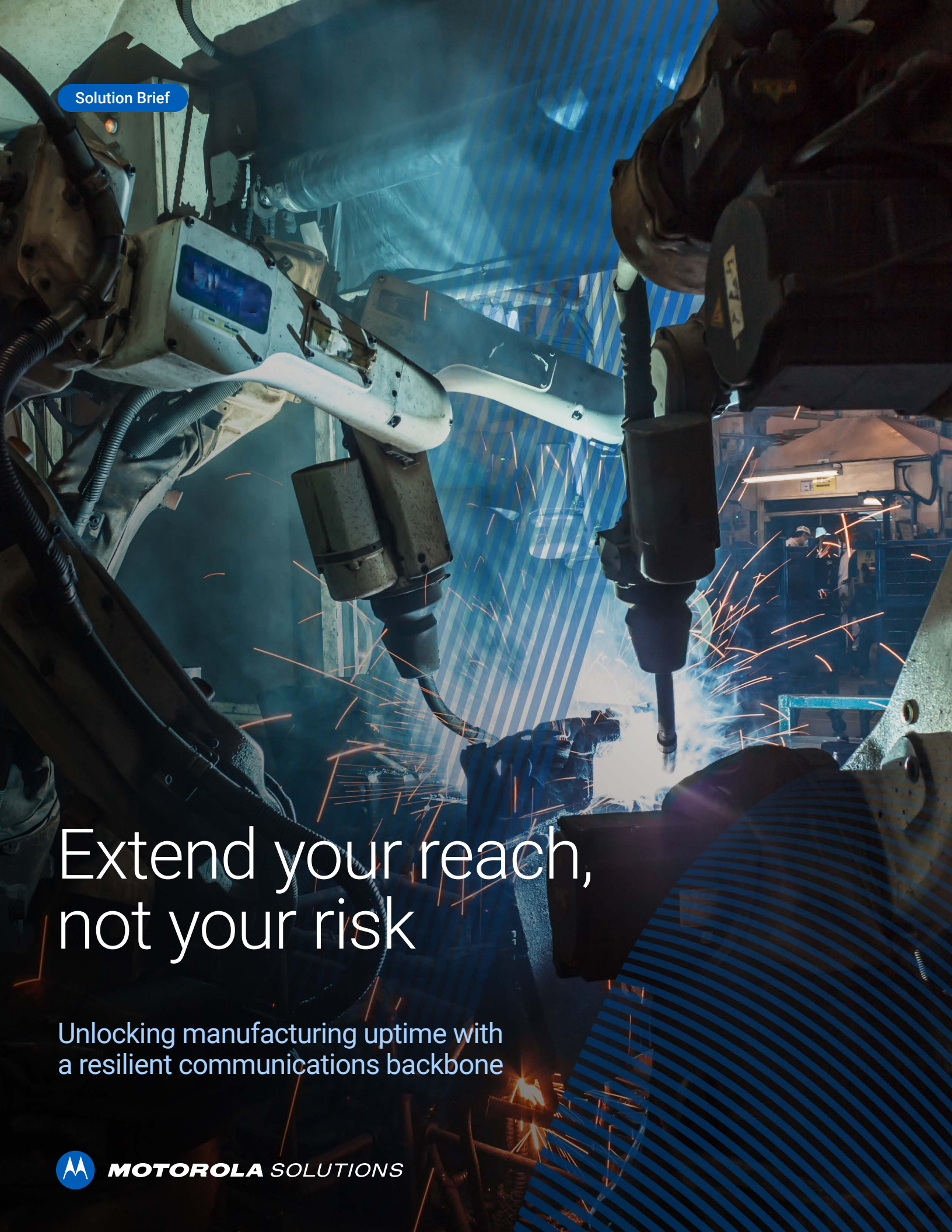


Solution Brief

Extend your reach, not your risk

Unlocking manufacturing uptime with a resilient communications backbone

MOTOROLA SOLUTIONS



Building a failsafe communications foundation

Sustaining manufacturing margins depends on maximizing plant-floor uptime. With throughput relying on continuous, real-time alignment across frontline teams, communications failures introduce immediate risk – stalling production lines, delaying response and driving up downtime costs. While broadband push-to-talk (PTT) is invaluable in connecting distributed teams across enterprise footprints, relying solely on public cellular and enterprise Wi-Fi connections introduces critical vulnerabilities. In the event of off-site carrier disruptions, regional power grid failures or network congestion, facilities risk losing operational control and hindering business outcomes like productivity, safety and security across the enterprise.

Eliminating these vulnerabilities while optimizing throughput requires an integrated architecture pairing a dedicated private radio backbone with broadband PTT mobility. While private radio secures real-time voice continuity on the plant floor, broadband PTT extends wide-area reach, multimedia sharing and smart-device collaboration across distributed operations. Aligning frontline teams with operational leadership accelerates decisions and delivers three key outcomes:

→ Guaranteed operational uptime

Unites a dedicated private radio network with broadband PTT to eliminate single points of failure, delivering instant voice certainty for line halts and device-agnostic coordination across the enterprise footprint.

→ Proactive worker safety

Protects personnel in severe and hazardous environments through certified intrinsically safe hardware, active industrial noise suppression and instant cross-device distress alerts.

→ Total facility protection

Secures unlit perimeters, active yards and storage bays by integrating AI video analytics, access control and environmental sensor data directly into the communications backbone.



Resilient, connected manufacturing operations

→ **Private communications networks**
Establish a dedicated, off-grid voice foundation operating independently of commercial carriers, guaranteeing plant coordination during utility outages and network disruptions.

→ **Two-way radios**
Equip frontline teams with instant, reliable group voice to streamline shift coordination, safeguard workers and maintain continuous production flow.

→ **Broadband PTT**
Extend voice and data across cellular and Wi-Fi to eliminate operational silos, connecting plant operations with mobile leadership and transport fleets to accelerate decisions.

→ **Video security and analytics**
Combine continuous visual awareness with automated anomaly detection to intercept operational threats early and protect plant uptime.

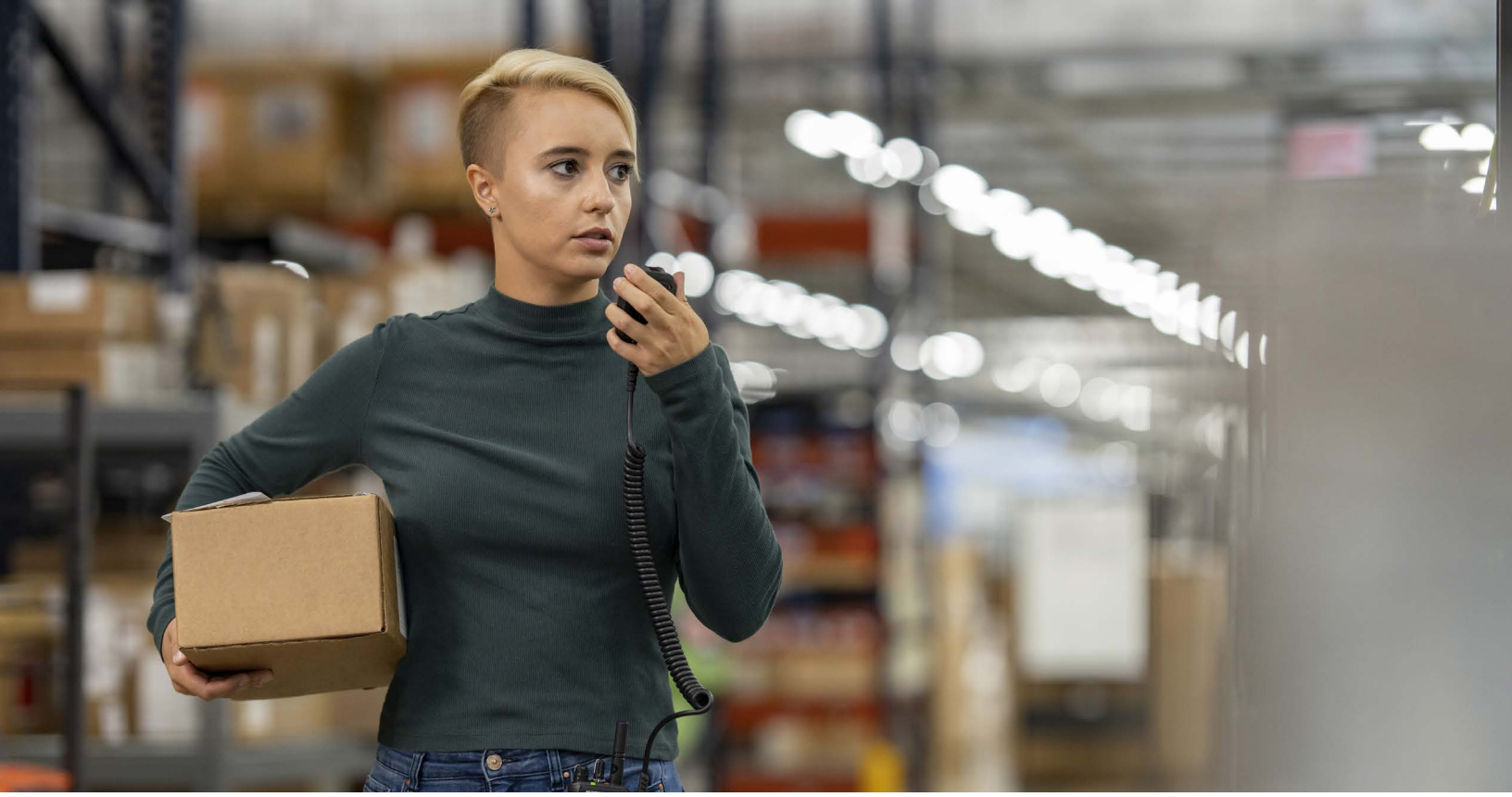
→ **Access control systems**
Enforce physical entry policies and credentials to secure critical assets, satisfy regulatory compliance and keep unequipped personnel out of high-risk areas.

→ **Integrated resilience software**
Consolidate fragmented safety workflows, digital playbooks and tamper-proof audit logs into a unified platform — reducing cognitive load, protecting business continuity and satisfying regulatory compliance.

Unified solutions to industry challenges

Our integrated ecosystem is purpose-built to address modern manufacturing facilities' biggest operational challenges.

	 **Resilient communications backbone**	 **Connected safety and security ecosystem**
→ **Structural signal blockage** Reinforced concrete, dense machinery bays and subterranean utility vaults create dead zones that interrupt operational flow and compromise worker safety.	**Eliminates plant dead zones:** Pierces dense structures where commercial wireless drops via dedicated private channels, while extending push-to-talk across everyday smart devices to keep remote facilities synchronized.	**Pinpoints personnel and hazards:** Eliminates site blind spots through indoor location tracking and fixed AI cameras, instantly broadcasting automated anomaly alerts to frontline talkgroups.
→ **Challenging plant environments** Ambient noise exceeding 90 dBA, combustible dust and volatile atmospheres demand certified intrinsically safe hardware that guarantees voice intelligibility during critical operations.	**Delivers clear voice in hazardous zones:** Suppresses heavy machinery roar through dual-microphone noise cancellation, while rugged, certified intrinsically safe hardware guarantees reliable communication across volatile atmospheres without ignition risk.	**Automates hazard containment:** Detects gas anomalies and restricted zone incursions in real time via environmental sensors and AI cameras, automatically locking access barriers and dispatching voice alerts in under 15 seconds.
→ **Workforce communication silos** Disconnected networks and disparate devices isolate mobile personnel from plant-floor crews, creating communication silos that delay incident resolution and jeopardize uptime.	**Unifies floor and mobile teams:** Bridges rugged plant-floor radios with broadband push-to-talk on consumer smart devices and built-for-purpose hardware, uniting frontline crews and mobile managers within shared talkgroups.	**Accelerates automated response:** Routes critical alerts instantly by linking physical alarms, access events and machinery telemetry directly to team talkgroups, cutting incident resolution time.



Resilient communications backbone

Private digital two-way radio systems

Operating independently of public carriers, dedicated private radio networks utilize dynamic channel trunking and continuous-duty repeaters to deliver an uncompromisingly reliable local voice baseline. This guarantees instant call setup and uninterrupted facility-wide voice control and coordination, protecting production continuity and eliminating vulnerability to external carrier outages.

Two-way radios and smart accessories

Purpose-built for volatile, high-noise environments, these portable radios combine with remote speaker microphones, high-noise headsets and intrinsically safe earpieces. Paired hardware features AI-driven dual-microphone noise suppression up to 120 dB SPL, spark-free HazLoc certification (UL TIA-4950), indoor Bluetooth® location tracking and automated man-down accelerometers.

Broadband PTT mobility

Secure interoperability gateways backed by enterprise-grade AES-256 encryption seamlessly bridge private radio talkgroups to cellular and Wi-Fi networks across purpose-built broadband handhelds and smart devices. On-site and off-site workers, engineers and executives can stream diagnostics, share photos and join plant talkgroups in real time – extending operational reach without compromising floor safety.

Intelligent battery and fleet management

Equipped with automated charging bay diagnostics, predictive battery health monitoring, and over-the-air fleet provisioning, intelligent battery management systems maximize device service life across multi-shift operations. Automated alerts flag degrading cells before shifts begin, preventing mid-shift communication drops and lowering total cost of ownership.



Connected safety and security ecosystem

Video security and AI analytics

Combining edge-AI analytics, thermal PTZ cameras and explosion-proof enclosures, video security provides site-wide visual awareness to detect thermal runaway, monitor perimeters and secure high-risk plant zones. Security teams can monitor boundaries, detect equipment overheating, streamline dock throughput, and rapidly investigate anomalies without manual guard patrols.

Access control systems

Featuring centralized browser management, real-time propped-door sensors, mobile touchless credentials, and direct video management integration, access control systems enforce strict physical security across sensitive facility zones. Restricting unauthorized entry to cleanrooms, packaging lines, and hazardous storage ensures regulatory compliance while enabling automated facility lockdowns during security emergencies.

Integrated resilience software

Replacing fragmented spreadsheets and single-point tools, integrated resilience software unifies safety workflows, incident playbooks and site alarms within a single operational console. The software drives real-time situational awareness for EHS leads and control room dispatchers — empowering teams to execute step-by-step checklists, coordinate targeted notifications and minimize downtime during critical events. Crucially, it compiles time-stamped digital audit logs that protect executive leaders during regulatory inquiries and safety audits.

Smart environmental sensors

Designed for areas where video security is prohibited, smart environmental sensors continuously detect chemical gas leaks, sudden air quality degradation and acoustic anomalies. Sending instant push notifications to safety managers enables immediate hazard mitigation to prevent toxic worker exposure and avoid costly regulatory violations.

Solutions in action

Assembly line equipment malfunction

- **Detect:** A packaging line lead identifies an unexpected shutdown on a primary high-speed stamping press that threatens a plant-wide stoppage.
- **Respond:** The line lead presses the push-to-talk button on their two-way radio to initiate a priority technical escalation. The voice transmission bridges to the off-site engineer's smartphone via broadband PTT integration, allowing the engineer to join the active production talkgroup immediately.
- **Resolve:** The engineer guides the on-site maintenance crew through an emergency bypass procedure over clear, noise-suppressed audio, restoring line operation within four minutes and preventing an extended plant shutdown.

Isolated worker distress response

- **Detect:** A technician falls in a subterranean utility space isolated from cellular and Wi-Fi coverage. Their intrinsically safe two-way radio detects the impact and lack of motion.
- **Respond:** After an unanswered countdown, the radio transmits an emergency distress alert and indoor beacon location over the dedicated private radio network, while broadband PTT bridges the alert to off-site EHS leadership.
- **Resolve:** Frontline responders reach the worker's coordinates to administer aid, while EHS personnel manage emergency medical playbooks and compliance documentation within the resilience platform.

Coordinated perimeter breach containment

- **Detect:** An individual crosses an exterior fence line after dark. A thermal camera detects the movement, classifies the target as human using edge AI and triggers a perimeter alert.
- **Respond:** Automated workflow software instantly broadcasts a text-to-speech alert over the dedicated private radio network to patrolling security teams, while access control locks adjacent exterior gates.
- **Resolve:** Security officers intercept the intruder before disruption reaches critical facility zones, while the video management platform automatically archives a time-stamped incident recording.



The Motorola Solutions difference

Failsafe performance for modern industrial resilience

We safeguard complex manufacturing environments through five foundational capabilities:

Unified safety and security ecosystem

We integrate business-critical voice, AI video analytics, physical access control and operational resilience software into a single, cohesive operational architecture.

Engineered for industrial realities

Our hardware is built to withstand extreme temperatures, dust, high-pressure washdowns and volatile atmospheres, delivering dependable voice clarity in the harshest environments.

Proven enterprise scale

We empower manufacturing leaders worldwide with resilient, scalable communications networks that safeguard plant uptime, protect workers and defend operating margins.

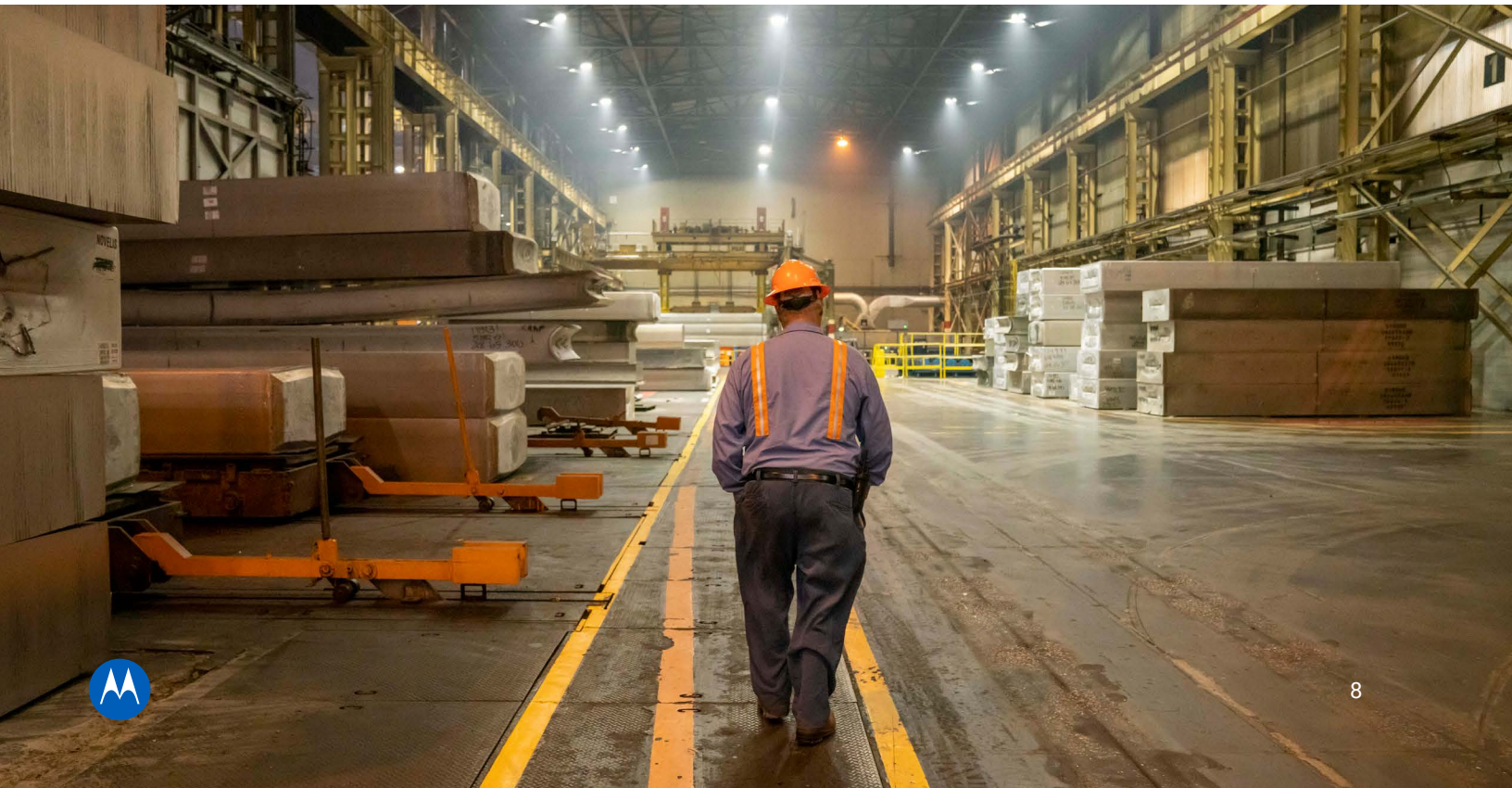
Tailored solutions

We collaborate across our certified partner network to deliver custom-configured deployments aligned with your facility layout, machinery density and daily operational workflows.

Lifecycle management and cybersecurity services

We provide technical support, over-the-air fleet programming and continuous cybersecurity maintenance to keep your entire technology ecosystem reliable and secure.

Protect your workers. Secure your facility. Guarantee your uptime.



To explore how to integrate these technologies into your operation, please reach out to our team at **motorolasolutions.com/manufacturing/resilientcomms**

MOTOROLA SOLUTIONS

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