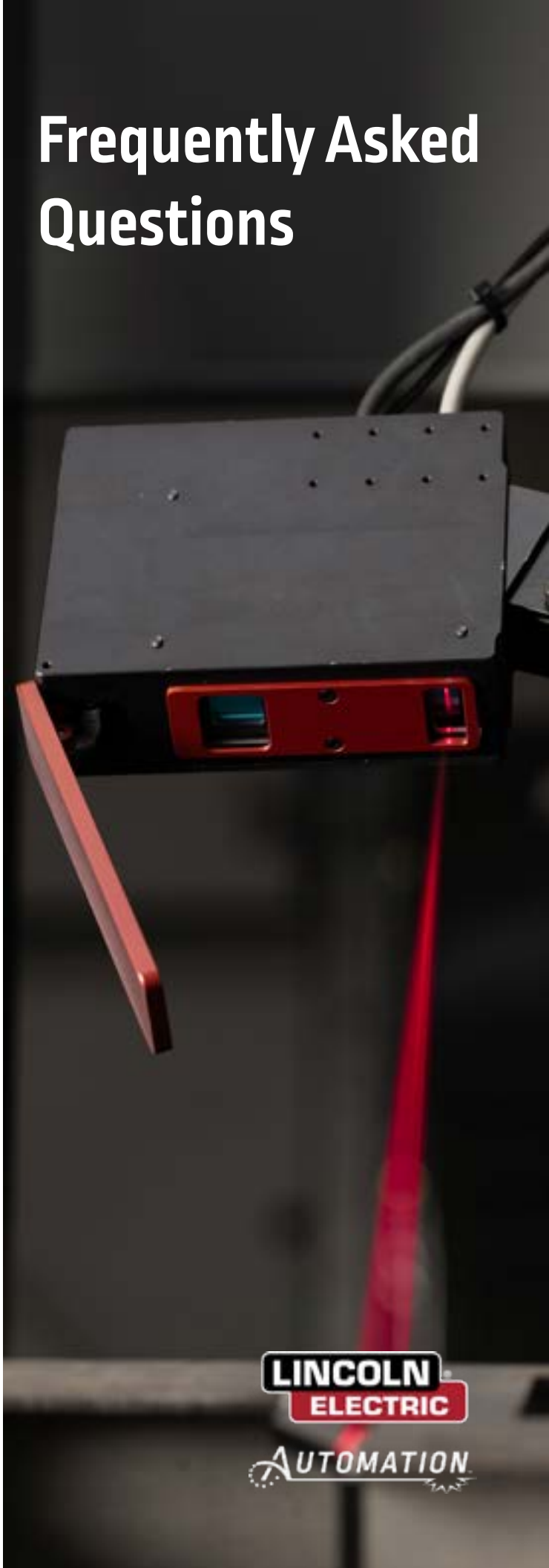
Frequently Asked Questions



This FAQ is designed to help you quickly understand how XpertLINC™ brings together motion, process, sensing, and over 100 years of Lincoln Electric® welding expertise to deliver smarter, easier, and more scalable automation. Below, you will find answers to the most common commercial, technical, and trust-related questions about XpertLINC, what it is, how it works, and why it changes what manufacturers can expect from automation.

What is XpertLINC?

XpertLINC is Lincoln Electric's next-generation industrial automation platform that integrates Physical AI-assisted decision tools to optimize manufacturing performance. Physical AI is the connective tissue between digital intelligence and real-world manufacturing operations, helping robots see, understand, and adapt to what is happening at the arc.

It brings together welding expertise, automation controls, and intelligent software into a unified environment designed to:

- Improve quality and repeatability
- Increase throughput and reduce rework
- Provide adaptive insights to operators and engineers
- Enable faster programming, troubleshooting, and optimization

Unlike generic AI tools, XpertLINC is purpose-built for physical manufacturing environments, with safety, reliability, and data segregation built into its architecture.

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What makes XpertLINC different from other automation or AI-enabled welding solutions?

XpertLINC is different because it automates welding intelligence, not just robot motion.

Unlike traditional "no-programming" or AI solutions that still rely on CAD models, static assumptions, or offline teaching, XpertLINC fuses motion, process, and sensing to adapt in real time. It uses live sensor data and Physical AI to generate optimized weld paths and parameters directly from the real world without requiring CAD models or programming expertise.

XpertLINC's advantage is amplified by Lincoln Electric's uniquely differentiated position in the automation stack. Lincoln Electric is uniquely positioned to combine welding power source technology, consumable development, welding procedure expertise, automation systems integration, advanced sensing technologies, and application engineering knowledge within a single integrated platform.

This enables XpertLINC to make welding decisions based on real welding science, process expertise, and proven fabrication knowledge rather than generalized automation assumptions. The result is faster deployment, consistent quality despite part variation, and expert-level welding performance without expert-level labor.

How does XpertLINC improve weld quality?

Backed by more than 100 years of Lincoln Electric engineering, XpertLINC uses Physical AI to enforce weld procedure specifications, ensure consistent execution, and maintain quality even under variable conditions. The system intelligently adjusts parameters in real time to meet weld requirements.

By combining real-time sensing, autonomous procedure selection, and Autonomous WPS Validation, XpertLINC helps manufacturers:

- Reduce weld variation
- Improve consistency
- Minimize rework
- Increase first-pass yield
- Improve process repeatability
- Support quality objectives

This ensures each weld is produced within defined engineering tolerances.

What problems does XpertLINC solve for manufacturers?

XpertLINC directly addresses the biggest barriers to automation adoption:

- Skill shortages: XpertLINC determines weld paths, parameters, and corrective actions, reducing reliance on skilled programmers or welders.
- Part variation: Real-time sensing allows XpertLINC to adapt to joint variation, misalignment, or inconsistent fit-up.
- Throughput and quality challenges: XpertLINC improves repeatability and reduces rework by enforcing Weld Procedure Specification, or WPS, limits and adjusting in real time.
- Scalability: One operator can oversee multiple cells.

What industries benefit most from XpertLINC?

XpertLINC is ideal for any operation facing high variation, high-mix production, or difficulty finding skilled welders. Common applications include:

- Shops struggling to produce repeatable parts
- Environments with high turnover or training burden
- Large assemblies where part placement varies
- Fabrication requiring multi-pass welds



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Do I need CAD models to use XpertLINC?

No. XpertLINC eliminates the need for CAD-based programming entirely. Other automation systems depend on digital models that rarely match real-world parts. XpertLINC uses sensor scans and Physical AI to generate correct weld paths and parameters automatically, directly from actual geometry.

How does XpertLINC improve adaptability on the shop floor?

XpertLINC adapts as the weld evolves. Using layer-by-layer scanning, the system recalibrates the weld plan after the initial scan to ensure each layer meets the specification. This allows XpertLINC to handle natural variations and inconsistent fit-up that defeat conventional automation.

Which welding processes are supported by XpertLINC?

XpertLINC supports a wide range of welding applications, including:

- Steel
- Stainless
- Cored

Is XpertLINC repeatable enough for high-mix production?

Yes. XpertLINC easily generates new programs when a new job comes on the line.

Can XpertLINC help manufacturers struggling with part variation?

Yes. XpertLINC was built specifically to overcome part variability. Its sensor-driven Physical AI adjusts motion, path, and parameters on the fly, helping ensure consistent results even when every part is slightly different.

Does XpertLINC support both high-volume and low-volume operations?

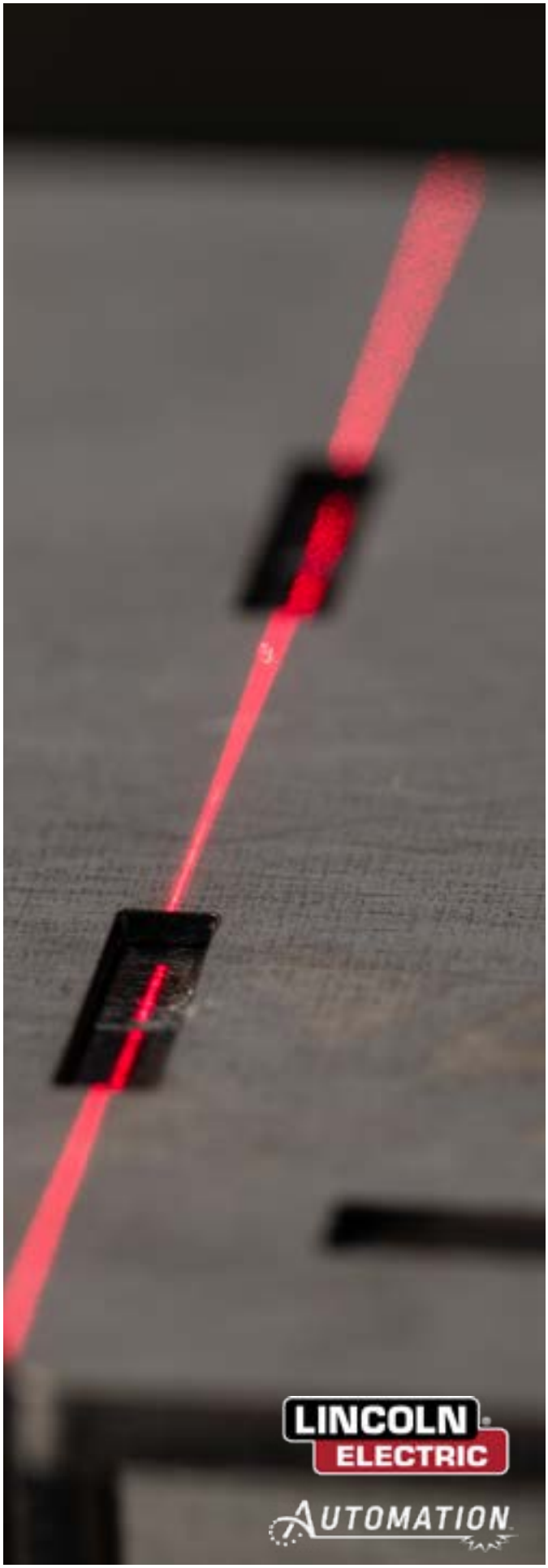
Yes. XpertLINC is versatile:

- Low-volume/high-mix: XpertLINC easily generates new programs with each scan.
- High-volume: XpertLINC delivers repeatable, reliable welding at scale.

This dual capability ensures XpertLINC grows with your business.

Does XpertLINC reduce operator training requirements?

Yes. Automation complexity is absorbed by Physical AI instead of the worker. XpertLINC performs the heavy lifting through auto-generated programs, making it ideal for environments with fewer experts. XpertLINC bridges the skills gap and helps new operators achieve high-quality results quickly, even with limited welding or robotics experience.



Weld Procedure Specifications (WPS)

What are Weld Procedure Specifications, and why should I care?

In short, a Weld Procedure Specification (WPS) is the foundation of consistent, compliant welding.

A WPS is a formal document that defines how a weld must be made to achieve the required strength, quality, and compliance. A WPS specifies the essential variables of welding, such as process type, filler material, voltage, current, travel speed, joint design, and acceptable tolerances based on proven procedures.

A properly followed WPS:

- Ensures weld quality and mechanical performance
- Maintains repeatability across operators, shifts, and locations
- Reduces defects, rework, and scrap
- Supports code and regulatory compliance, such as AWS, ASME, and ISO
- Protects your organization during audits or inspections

Does XpertLINC Include Welding Procedure Specifications (WPS)?

Yes. With XpertLINC, WPS intelligence is embedded directly into the platform, so welds are made automatically, and consistently, even as conditions change. Drawing from more than a century of Lincoln Electric welding expertise, process development, and application knowledge, these procedures provide the foundation for autonomous welding decision-making.

Using advanced sensing and Lincoln Electric welding intelligence, XpertLINC evaluates each weld joint and selects a welding procedure from its available WPS library. The system then automatically generates an optimized weld strategy based on actual joint conditions and the requirements of the selected procedure.

While XpertLINC automates procedure selection and execution, responsibility for validating that a selected procedure is appropriate for a specific application remains with the customer.

Can Customers Use Their Own Welding Procedure Specifications?

Yes. Customers may create, approve, and maintain their own welding procedures based on internal requirements, customer specifications, industry standards, or regulatory obligations. XpertLINC can utilize approved customer procedures while maintaining the same automation, traceability, validation, and consistency benefits provided by the XpertLINC platform.

While XpertLINC automates procedure selection and execution, responsibility for validating that a selected procedure is appropriate for a specific application remains with the customer.

What is Autonomous WPS Validation?

Autonomous WPS Validation is XpertLINC's ability to automatically compare actual weld joint conditions against the requirements of the selected Welding Procedure Specification before welding begins.

Using advanced sensing technology and Lincoln Electric welding intelligence, XpertLINC evaluates critical weld variables including:

- Joint geometry
- Material thickness
- Root opening
- Fit-up conditions
- Bevel configuration
- Weld location characteristics
- Other essential procedural variables

When measured conditions fall within the allowable operating envelope of the selected procedure, XpertLINC automatically generates an appropriate weld strategy and proceeds with production.

When measured conditions fall outside the supported limits of the selected procedure, XpertLINC alerts the operator and can prevent automated execution until corrective action is taken or an alternative approved procedure is selected.

This helps manufacturers improve weld consistency, reduce rework, support compliance objectives, and ensure adaptive automation remains grounded in established welding procedures.

How does XpertLINC enforce Welding Procedure Specifications?

Before welding begins, XpertLINC validates measured joint conditions against the operating envelope of the selected Welding Procedure Specification. If detected conditions fall outside supported limits, XpertLINC can alert the operator and prevent automated execution until corrective action is taken or an approved alternative procedure is selected.

Can XpertLINC Create or Qualify a WPS?

No. XpertLINC can select, apply, and validate against available welding procedures, but it does not replace responsibilities associated with welding procedure development, qualification, approval, or code compliance.

By embedding Lincoln Electric welding expertise into the workflow, XpertLINC helps manufacturers consistently apply their approved welding procedures, as determined by the manufacturer's qualified personnel and their assessment of applicable code, customer, and regulatory requirements.

XpertLINC serves as an execution and validation platform, helping ensure welding operations remain within the intended procedural envelope once an appropriate procedure has been selected and validated by the customer for the application.

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Can XpertLINC handle multi-pass welding automatically?

Yes. XpertLINC automatically:

- Generates stacking patterns
- Analyzes each pass
- Rescans between layers, if needed, to adapt to height changes
- Optimizes fill strategies using Physical AI models

How fast can I deploy XpertLINC?

Because XpertLINC requires no CAD models and minimal programming, deployments are significantly faster than traditional automation installations. XpertLINC can begin producing welds shortly after scanning real-world parts.

What ROI can manufacturers expect from XpertLINC?

Manufacturers typically see ROI through:

- Higher throughput
- Lower scrap and rework
- Reduced fixture complexity
- Smaller programming footprint
- Faster line changeovers
- Higher operator-to-cell ratio
- Faster onboarding of new operators
- Improved compliance consistency
- Increased utilization of automation assets
- Reduced dependence on highly specialized welding personnel
- Greater flexibility in high-mix manufacturing environments

XpertLINC delivers value by reducing:

- Programming labor
- Rework and scrap
- Cycle-time variation
- Training burden



Does XpertLINC Require Lincoln Electric Consumables?

XpertLINC is developed, tested, and optimized using Lincoln Electric welding equipment, welding consumables, and process data.

The system's welding intelligence, adaptive process behavior, Autonomous WPS Validation capabilities, and performance expectations are based on qualified combinations of Lincoln Electric products and welding procedures.

Use of alternative consumables may affect welding performance, process behavior, weld quality, and procedural qualification requirements. Customers remain responsible for verifying the suitability of all welding materials, consumables, and procedures used within their manufacturing environment.

Is XpertLINC suitable for manufacturers without a robotics team?

Yes. XpertLINC removes traditional entry barriers. If you lack skilled robot programmers or face turnover and onboarding challenges, XpertLINC's auto-generation, scanning, and Physical AI tools allow your team to deploy automation quickly and consistently.

Is XpertLINC secure?

XpertLINC™ is built with trust at its core. Every capability, from sensing and decision-making to motion control, operates within strict guardrails designed to protect your data, ensure model quality, and support regulatory readiness.

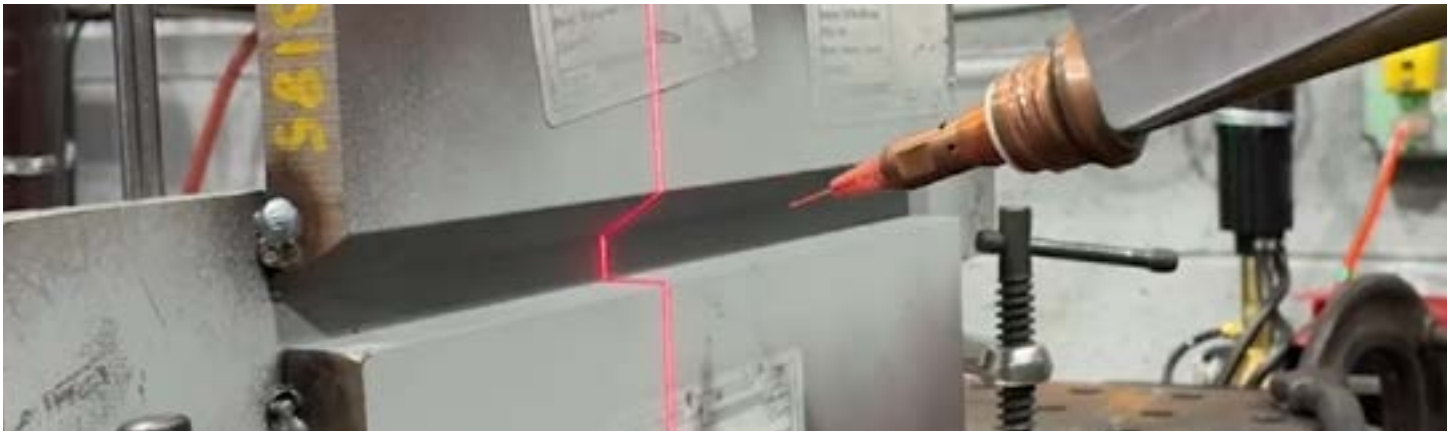
XpertLINC's governance approach follows the NIST AI Risk Management Framework: Govern, Map, Measure, and Manage. Lincoln Electric also proactively tracks phased obligations under the EU AI Act, including requirements for general-purpose AI, transparency, and high-risk systems. This foundation ensures that XpertLINC not only performs reliably in industrial environments but does so responsibly and compliantly.

XpertLINC does not autonomously override:

- Qualified welding procedures
- Industrial safety systems
- Machine guarding requirements
- Customer-defined process controls
- Established authorization requirements
- Regulatory compliance obligations

All system operations remain within defined process and safety boundaries.

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Does XpertLINC train on my data?

No. Our standard customer terms reflect the same protection we require of our own vendors: your inputs and outputs remain your data, and we do not use your data to train, retrain, fine-tune, or improve models.

Can I prevent any human review of my content?

Yes. Where human review would otherwise be used for quality assurance, we provide opt-out paths and ensure any review, if enabled, is covered by confidentiality, access controls, and need-to-know restrictions.

How does XpertLINC address accuracy, "hallucinations," and content quality?

XpertLINC is designed to reduce inaccurate or unsafe outputs by separating AI-assisted recommendations from safety-critical control. Robot motion and welding parameters remain bound by validated operating limits, including the approved WPS, equipment ratings, joint geometry, reachable robot positions, speed and acceleration limits, heat-input calculations, and process tolerances. Independent industrial safety controls—such as guarding, interlocks, safety-rated stops, access monitoring, and emergency-stop circuits—remain authoritative and are not overridden by AI. Sensor inputs and calculated outputs are checked for plausibility, confidence, and consistency before execution; conditions outside the validated operating envelope trigger a stop, alarm, or operator review rather than an unsupported action. Models are tested before deployment and evaluated periodically using representative parts, known edge cases, and measurable acceptance criteria. This layered approach keeps adaptation within the boundaries established by physics, mathematics, qualified welding procedures, and the cell's risk assessment.

Which Large Language Models does XpertLINC use?

None. XpertLINC does not rely on generic Large Language Models. Instead, XpertLINC is powered by something far more valuable: more than 100 years of Lincoln Electric welding expertise, engineered into a suite of proprietary, purpose-built Physical AI models.

Rather than adapting consumer-grade LLMs for the factory floor, XpertLINC uses domain-trained intelligence rooted in real-world arc physics, process science, metallurgy, and automation. The result is welds precision-tuned for manufacturing.
XpertLINC is not built on LLMs. XpertLINC is built on Lincoln Electric, The Welding Experts™.

What happens if you introduce a new AI feature?

No surprises. If a software feature adds or enables AI, we will notify you and obtain your prior written consent before enabling the feature for your tenant.

How do you handle third-party models, including general-purpose AI and Large Language Models, inside XpertLINC?

We do not use third-party models.

What about intellectual property and copyrighted content in AI outputs?

The output program and weld path are yours to use.

Important Notice
Performance results are derived from specific test conditions utilizing Lincoln Electric® consumables. Actual customer results may vary and are dependent upon consumable selection, base material, welding procedure, operating environment, and other application-specific factors.
Lincoln Electric® WPS programming is intended for general fabrication applications and may not satisfy all job-specific requirements. Users are responsible for verifying that the selected welding procedure complies with applicable codes, standards, specifications, customer requirements, and regulatory obligations for the user's specific situation or application. Lincoln Electric encourages the use of approved customer-specific WPSs where required. XpertLINC™ does not replace the user's responsibility for evaluating engineering judgment, administrative authority, code compliance, regulatory oversight, product quality, or required procedure qualification activities. Lincoln Electric does not warrant or guarantee or assume any liability with respect to the customer's product. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that may arise from the information and technical data provided, including any implied warranty of merchantability, fitness for a particular purpose, or any similar or equivalent warranty, is expressly disclaimed.
*Autonomous WPS Validation™ is XpertLINC's ability to automatically evaluate scanned weld-joint conditions against approved Welding Procedure Specifications (WPSs), verify compliance with established procedure requirements, generate welding programs within approved limits, and identify conditions requiring review before welding begins. By embedding Lincoln Electric welding expertise into the workflow, XpertLINC helps manufacturers apply their approved welding procedures, as determined by the manufacturer's qualified personnel and their assessment of applicable code, customer, and regulatory requirements.

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