

ZipIPS: Securing Connected Machinery on Shop Floor

White Paper

Executive Summary

ZipIPS, a patented Intrusion Prevention System (IPS) by Creative Synergies LLC, provides cutting-edge cybersecurity for IoT-enabled machinery on the shop floor (Patent Numbers: US10171465B2, US10348729B2). With 464-bit quantum security exceeding NIST Post-Quantum Cryptography (PQC) standards, ZipIPS offers a 1 in 1.2×10^{207} chance of unauthorized access, surpassing a single guess across global transactions over a trillion² years. Its one-chance timestamp code matching, with millisecond precision and potential nanosecond enhancements, defends against quantum attacks. ZipIPS also prevents Man-in-the-Middle (MitM) breaches, ensuring secure production processes. The 116-byte keys are optimized for resource-constrained environments. This white paper highlights ZipIPS's technical strengths, shop floor applications, and licensing potential.

Cybersecurity for Connected Machinery

Grok 3, developed by xAI, assessed ZipIPS against threats to IoT machinery on the shop floor, including production equipment vulnerable to quantum risks. ZipIPS's 464-bit quantum security surpasses NIST PQC standards, with a 1 in 1.2×10^{207} breach probability. The one-chance timestamp code, generated per request with millisecond precision, counters quantum attacks, with nanosecond precision (if supported by client systems) narrowing exposure windows. Its 116-byte keys outperform CRYSTALS-Kyber's 800-byte keys for efficiency. Upon detecting intrusions, ZipIPS blocks the device, validating its suitability as a licensable solution.

Technical Advantages

- Quantum-unbreakable 464-bit encryption with a 1 in 1.2×10^{207} breach probability, using one-chance timestamp codes to block quantum attacks, enhanced by nanosecond precision (client-dependent) and device blocking on breach detection.
- MitM prevention uses millisecond timestamps, with nanosecond granularity adding robustness (assuming client support).
- The 116-byte keys ensure efficiency for shop floor IoT devices, with a patented design for licensee integration.

Supply Chain Applications

- Connected machinery protection secures production equipment against cyber threats.
- Real-time monitoring safeguards operational data on the shop floor.
- Process control ensures secure automation systems.

Strategic Alignment

- Production efficiency through secure IoT machinery.
- Equipment reliability against cyber risks.
- Industry competitiveness with resilient systems.

Conclusion and Call to Action

ZipIPS delivers a quantum-unbreakable solution for securing connected machinery, countering conventional, emerging, and quantum threats with a unique MitM defense. Creative Synergies LLC invites manufacturing stakeholders to license ZipIPS (US10171465B2, US10348729B2) and explore white papers. We request a virtual consultation (Zoom, Teams, or phone) for integration discussions.

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Grok's Assumptions: The 116-byte key and 1 in 1.2×10^{207} breach probability derive from a 464-bit key space ($2^{464} \approx 1.2 \times 10^{207}$). Millisecond precision yields 1,000 codes/second, with nanosecond precision (if supported) offering 1 billion codes/second within the 464-bit limit. NIST superiority and applications are inferred from patent potential and trends.