

BC Automation

Carrier-Free, Signature-Based Communication

Tech Primer - 11/07/25

At BC Automation, we're exploring what comes after the signal — when all conventional transmission fades, yet truth still needs to be known.

Carrier-Free, Signature-Based Communication replaces broadcasting with emanation: devices that communicate through their inherent persistence rather than external power or carriers. This technology sits at the frontier of energy physics and mission assurance — enabling communication that endures where no antenna can reach.

From deep-space probes to embedded IIoT nodes, we're redefining what "connection" means in isolation.

PROBLEM: Loss of Signal, Loss of Truth

In environments where RF, optics, or vibration cannot survive, communication fails and verification ends.

Loss of signal means loss of truth — in flight, in containment, in the field.

- Deep-ocean probes, sealed reactors, and plasma-shrouded spacecraft share a common silence
- Conventional telemetry demands energy, medium, and contact — all of which vanish under extreme conditions
- Without persistent data, we lose post-event verification and mission continuity

SOLUTION: Hidden Spectrum Operation

BC Automation's R&D division is developing Hidden Spectrum Operation — using the latent band of energy persistence where no antenna can reach to encode proof of operation directly into physical decay.

- Carrier-Free, Signature-Based Design — replaces transmission with self-authenticating emission
- Hidden Spectrum Persistence — energy decay itself becomes the medium of continuity
- Encrypted & Plain-Sight Coding — low-detectability or post-event recovery
- Signature-Based Encoding — each device writes its operational truth as a verifiable physical signature, creating immutable audit trails
- Long-Life Power Integration — The same isotopic decay that powers the probe becomes the basis of its communication — energy and information drawn from a single, enduring source

OUR IMPACT: Continuity Without Contact

- Autonomous proof-of-action for defense, aerospace, and other missions
- Continuity without contact — information survives where systems do not
- Ethical assurance in autonomy: a permanent audit trail
- Zero-power telemetry for post-event and unreachable environments
- Automation's Factory 5.0 principles of transparency and dignity



101+

clients served

712+

unique processes automated

\$4.9B+

client dollars saved

"A huge asset to any company looking to improve their cost and reliability."

Chris Whitehair
SVP Global Operations at SunOpta

"[BC Automation's] solutions are most thorough and comprehensive."

Ned Mitenius
Founder & Sr Consultant at Periscope Consulting

Let's Transform Your Manufacturing Together.



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