

Sea Port Perimeter Security with IRONCLAD

How an international maritime port authority protected approximately 2 miles of multi-terminal fence with IRONCLAD: ten zones on five LPU-402 processors tuned zone by zone against crane vibration, with hardware rated for the coastal environment it lives in.



AERIAL VIEW OF A MULTI-TERMINAL SEA PORT. ILLUSTRATIVE IMAGERY; CUSTOMER IDENTITY WITHHELD.

2 mi

FENCE COVERED

10

DETECTION ZONES

5

LPU-402 PROCESSORS

NEMA 4X

RATED ENCLOSURES

ISPS

COMPLIANCE CONTEXT

The Challenge

Two problems killed the port's previous approach: salt, and cranes.

The port authority manages a multi-terminal facility handling container ships, bulk cargo and cruise liners, operating under the ISPS Code. The perimeter runs roughly 2 miles, bordering industrial zones on one side and open coast on the other, around exactly what smugglers and thieves want.

Salt spray and humidity are brutal on outdoor electronics, and the port's legacy fence alarms could not separate crane and container-mover vibration from a real intrusion. They triggered constantly, so operators stopped treating them as alarms.

WHAT THE REPLACEMENT HAD TO SURVIVE

- A working container terminal that never sits still: gantry cranes, straddle carriers, constant vehicle movement.
- A corrosive coastal atmosphere a few hundred meters from open water.
- About 2 miles of high-traffic fence to watch continuously, zone by zone.

The Solution, IRONCLAD Fence Alarm System

The deployment covers approximately 2 miles of fence in ten zones of roughly 1,000 ft each, running on five LPU-402 processors. Each zone carries its own sensitivity settings, so the fence beside the crane rails is tuned against heavy ambient vibration while quieter runs are set more sensitive.

- **Rated for the coast:** the sensor cable is rated for continuous outdoor coastal exposure, and processors sit in NEMA 4X (IP66) enclosures, a rating specified for corrosive atmospheres.
- **Sealed sensing element:** no exposed electronics between the fence and the processor.
- **Commissioned in operation:** tuning was walked through the port's real operating day, with terminals working.
- **Platform-agnostic alarms:** zone alarms feed the port's security operations center through standard outputs.

The Results

A zoned alarm picture replaced a stream of nuisance triggers.

The design intent is that a cut or climb anywhere on the 2 miles raises a zone alarm the operators can act on, instead of the constant triggering they had learned to ignore.

- Operators see which of the ten zones is alarming and dispatch to that stretch of fence.
- The fence line is now a documented, testable detection layer in the port's ISPS security plan.
- RBtec has not published measured before and after alarm or incident counts for this port.
- A security integrator completed the installation in a few days, with no interruption to vessel or gate operations.

"A port is the hardest tuning environment we work in short of an airport. A crane lifting a container puts steady vibration into everything around it, so each zone gets its own settings: the fence by the crane rails is not tuned like the fence by the truck gate. That is why the system ships with per-zone sensitivity rather than one global knob."

RBtec engineering team

IRONCLAD at a Glance

System	IRONCLAD Fence Alarm System
Perimeter covered	Approximately 2 miles (3.2 km) of fence
Zones	Ten zones of approximately 1,000 ft (305 m)
Processors	Five LPU-402 units, two zones each
Environment	Cable rated for continuous outdoor coastal exposure, NEMA 4X (IP66) enclosures
Noise handling	Per-zone sensitivity tuning against crane and container-handling vibration
Integration	Zone alarms into the port's security operations center
Installation	Security integrator, a few days, terminal operations uninterrupted



IRONCLAD-PROTECTED PERIMETER FENCE ALONG THE QUAY AT A SEA PORT. CUSTOMER IDENTITY WITHHELD.

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