POSSOL **INNOTECH**

Smart Steel for a Greener Future

주식회사 포솔이노텍

Eco-friendly **corrosion-resistant coating solutions** that extend the life of steel components while lowering CO_2 across manufacturing.

PoSSEN® Technology

Established Nov 2024 Incheon, South Korea www.possol.kr

Company Overview

POSSOL INNOTECH is a specialized materials startup spun off from POSCO, dedicated to solving corrosion challenges in steel structures with eco-friendly inorganic coating technology.

Establishment

November 2024

Officially spun off from POSCO In-house Venture Program

Location

Incheon, South Korea

Michuhol Tower Annex A, Yeonsu-gu

Core Business

R&D & Surface Treatment

Eco-friendly inorganic anti-corrosion coating & fasteners

Certifications

ISO 9001 | ISO 14001 | Venture Company | R&D Center

Key Programs

TIPS Selection (2025)

POSCO INNOVILT Brand Certification

Proprietary Brand

PoSSEN®

POSCO Steel Surface Solution with Eco-friendly Nano-coating

Timeline & Milestones (2023–2025)

2023.11

- Selected as POSCO in-house venture (POVENTURES 5th)
- 'POSSOL INNOTECH TF Team' Launched

2024.04 - 06

- POSCO INNOVILT Certification
- Pre-startup Package Selection
- KIBO Camp Excellence Award

2024.11 - 12

- Incorporated: POSSOL INNOTECH
- PoSSEN® Trademark Registration
- R&D Department Recognition

2025.01 - 02

- ISO 9001 / 14001 Certification
- Venture Company Certification
- Joined POSCO Eco-Materials Research Union

2025.04 - 12

- TIPS Program Selection
- Seed Investment (250M KRW)
  - Infobank / Daejeon Changkyung
- NST OEM Agreement
- Energy Spot Distribution MOU

2026.01 - 03

- Samsung C&T Residential Supply Started
- Livestock Barn Repair Screws Supply
- KDB NextONE Program Selection
- INNOPOLIS Global PoC (Solar Structure Fasteners)

The Problem: Corrosion is Costly & Persistent

3-4%

of Global GDP Lost

Annual economic loss due to corrosion damage worldwide, impacting infrastructure sustainability.

20-50%

Lifespan Reduction

Structural lifespan significantly shortened in marine & offshore environments without proper protection.

Accelerated

Marine Damage

Shift to floating solar & offshore wind exposes components to harsh salt/humidity, accelerating failure.

Fasteners & Brackets: The Weakest Link

Critical Failure Point

While structural steel (like PosMAC) is highly durable, the **connection points (bolts, nuts, brackets)** often corrode first due to galvanic reaction and insufficient coating protection, compromising the entire structure's integrity and safety.

Stainless Steel (STS)

Commonly used for high corrosion resistance but comes with significant trade-offs.

MAJOR DRAWBACKS

Extremely high cost (3-5x vs carbon steel) and potential for galvanic corrosion when paired with other metals.

Aluminum Alloys

Lightweight alternative often used in solar mounting structures.

MAJOR DRAWBACKS

Insufficient mechanical strength for high-load structural applications compared to steel components.

Organic Coatings

Traditional paints and polymer-based protective layers.

MAJOR DRAWBACKS

Environmental issues (VOCs), peeling over time, and lower long-term durability in UV/marine conditions.

Market Opportunity (Growth Potential)

Global Fastener Market (2023)

$91.3 Billion

↑ Massive Scale Industry

Marine Fastener Market

$26.5 Billion

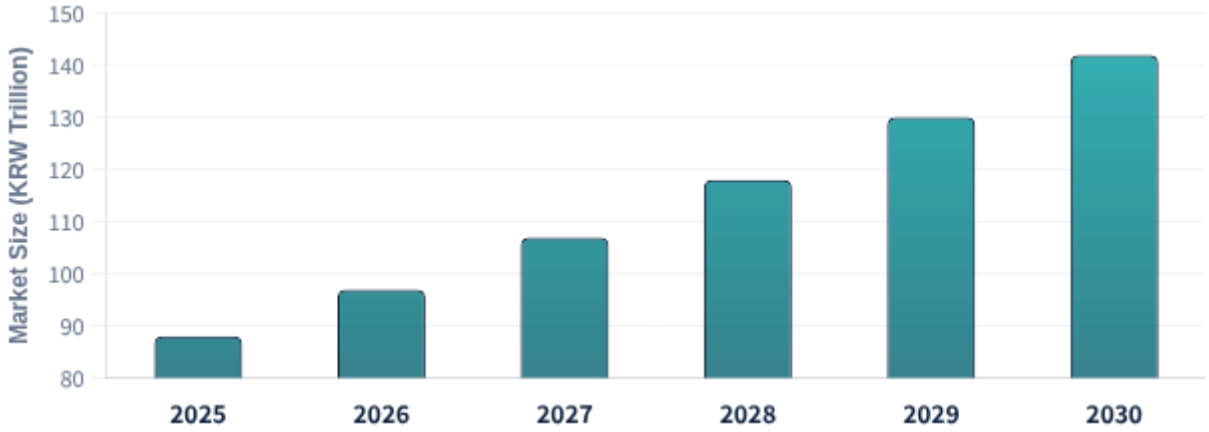
High-Value Segment

Floating Solar Growth

22% CAGR

Rapid Expansion

Corrosion-Resistant Steel Components Market (KRW Trillion)



Strategic Market Drivers

- Shift from land to **water/offshore** installations demands superior corrosion resistance (10x durability).
- Longer structural design life (20-30 years) requires advanced protection beyond standard galvanization.
- Global push for **low-carbon solutions** favors eco-friendly coating technologies like PoSSEN®.

The PoSSEN® Solution Advanced Inorganic Coating Technology

PoSSEN®

POSCO Super Sustainability
under harsh ENvironment

A revolutionary inorganic coating solution designed specifically to extend the lifespan of steel structures while significantly reducing the carbon footprint of the manufacturing process.

- **Optimized for PosMAC® Steel**
- **Eco-friendly Low-Temp Process**

Galvanic Corrosion Prevention

Matches electropotential of PosMAC® and aluminum structures (±0.05V range), eliminating the "battery effect" that corrodes standard fasteners.

Solves the #1 Failure Cause

Low-Carbon Manufacturing

Cures at low temperatures (200-250°C) compared to conventional 450°C+ processes, reducing energy consumption and CO_2 emissions.

36.6% CO_2 Reduction

Extreme Durability

Inorganic coating with special anti-corrosion pigments provides barrier protection that outperforms standard Zinc and Electro-galvanized coatings.

4x Better Performance (CCT)

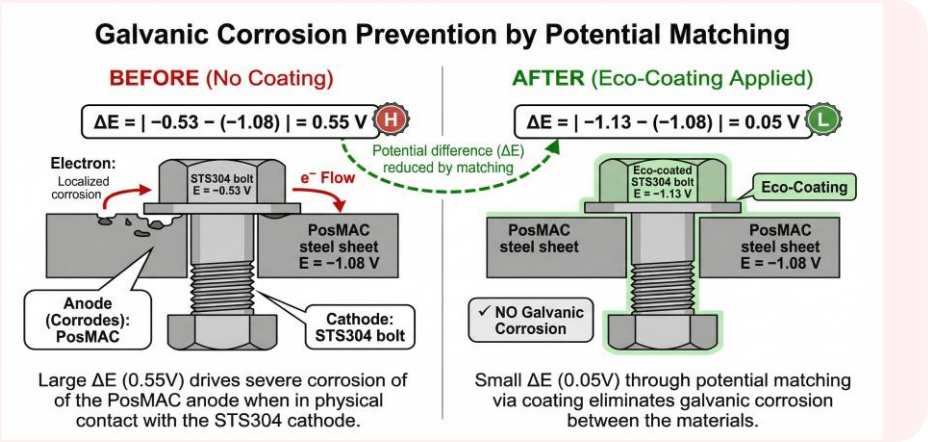
Proven Compatibility

Officially validated for use with high-corrosion-resistant zinc alloy steels (PosMAC®), ensuring system integrity for solar and marine projects.

POSCO Certified

Technology: Galvanic Corrosion Prevention

The Galvanic Corrosion Problem



Mechanism: When dissimilar metals (like PosMAC and Stainless Steel) contact in an electrolyte, a "battery effect" occurs.

The metal with lower potential (Anode) corrodes rapidly to protect the one with higher potential (Cathode).

Field Reality

- → Standard zinc plating dissolves too quickly.
- → STS bolts cause the surrounding PosMAC structure to rust, leading to connection failure.

The PoSSEN® Solution: Potential Matching

HDG	STS	PoSSEN®
		

Barrier Protection

Dense inorganic layer blocks moisture and oxygen from reaching the base metal.

Sacrificial Action

Controlled sacrificial protection prevents red rust even if coating is scratched.

Repeated Tightening

Maintains thread integrity and corrosion resistance even after 5x tightening cycles.

Technology: Coating Process Flow

Pretreatment

Blast cleaning & degreasing

Surface prep

1st Coating

Dip & Spin Method

Uniform application

Drying (Curing)

210-250°C

Low-Temp Process

2nd Coating

Additional Layer

Enhanced barrier

Final Cure & QA

210-230°C

Inspection

Precision Thickness

15 ± 5 µm

Optimal thickness for thread fit and corrosion resistance without compromising assembly.

Eco-Friendly

Low-Temp Curing

~250°C process reduces energy consumption compared to hot-dip galvanizing (450°C+).

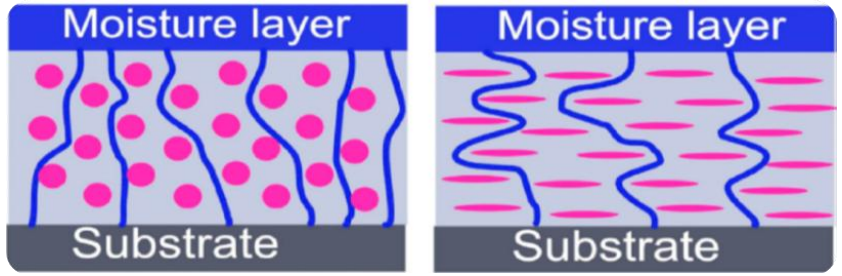
Scalability

OEM Ready

Designed for repeatable quality in mass production environments with consistent output.

Technology: Composition & Potentials

Binder Type	Epoxy-based Organic/Inorganic Hybrid
Composition	**Base:** Zinc (Zn) & Aluminum (Al) Flake Mixture Includes special anti-corrosion additives
Thickness	15 ± 5 µm (Standard Specification)
Curing Temp	200°C – 250°C (Low-Temperature Process)
Appearance	Silver Grey (Metallic finish)
Function	Galvanic Corrosion Prevention + Barrier Protection



tortuous pathway

Natural Potential (vs. SCE)

PoSSEN® Bolt	PosMAC® 3.0
-1054.7 mV	**-1041.6 mV**

Perfect Potential Match (Δ < 50mV)

Protective Mechanism

Tortuous Diffusion Path

Lamellar Zn & Al flakes create a complex, winding path that physically blocks moisture and oxygen from reaching the substrate.

Active Passivation

Special anti-corrosion additives promote the formation of a stable passivation layer, self-healing minor surface damage.

Performance: Cyclic Corrosion Test (ISO 14993)

Corrosion Resistance Comparison (Cycles to Red Rust)

KTR Verified

4x - 8x Superior Durability

PoSSEN® Marine grade withstands 500+ cycles in ISO 14993 CCT compared to just ~60 cycles for conventional Zinc plating, offering a massive leap in lifespan.

Repeated Tightening Integrity

Even after **5 repeated tightening cycles**, the coating layer maintains structural integrity without peeling or cracking, ensuring long-term maintenance capability.

Certified No Red Rust

Official KTR test reports confirm **>300 cycles with zero red rust formation**, validating performance for critical infrastructure projects.

Economics: Lifecycle Cost Advantage Total Cost of Ownership (TCO) Analysis

10-Year Lifecycle Cost Comparison (Index)

Category	Conventional Material	PoSSEN® Solution	Savings
Initial Material Cost	100 (Index Base)	120	+20%
Installation Labor	300	300	-
Maintenance (10 yrs)	1,600 (8 cycles)	780 (3 cycles)	**-51%**
Total Cost (10 yrs)	**2,000**	**1,200**	**-40%**

Strategic Insight

While initial material cost is slightly higher (+20%), the drastic reduction in maintenance cycles leads to a **40% total cost savings** over a 10-year period.

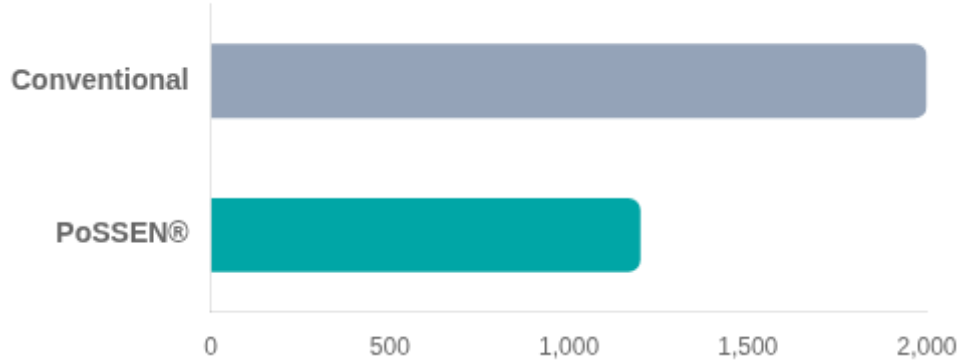
Initial Cost Advantage vs STS304

15-20% Lower

Maintenance Cost Reduction

>40%

Total Cost Index (10 Years)



Cost Structure Breakdown

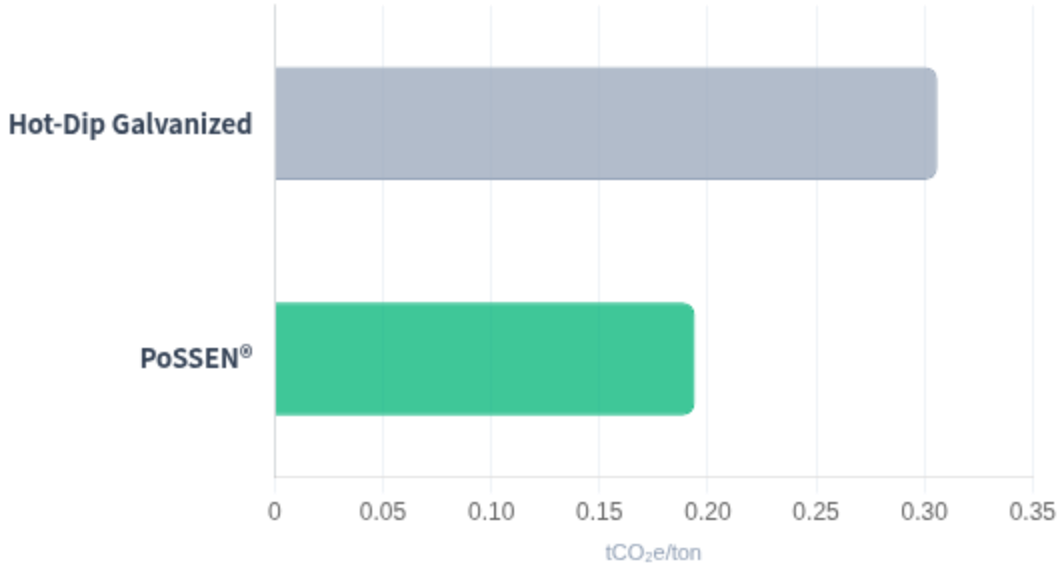
PoSSEN® Cost Distribution

Environmental Advantage (Low-Carbon Manufacturing)

CO_2 Emissions Comparison

↓ 36.6% Reduction

Unit: tCO_2e/ton (Global Warming Potential)



Source Data:

- PoSSEN®: 0.194 tCO_2e/ton (Based on internal LCA study)
- Hot-Dip Galvanized: 0.306 tCO_2e/ton (Industry standard average)

Low-Temperature Curing Process

Significantly lower energy consumption during production.

Conventional (HDZ)		PoSSEN®
~450°C	→	~250°C
High Energy Intensity		**Eco-Friendly Efficiency**

ESG & LCA Compliance

- Supports **Scope 3 Emission Reduction** goals for automotive and construction partners.
- Aligns with global environmental regulations (EU CBAM, REACH) by eliminating hazardous heavy metals.
- Enhances **Lifecycle Assessment (LCA)** scores for green building certifications (LEED, BREEAM).

Product Lineup (Comprehensive Solutions)

PoSSEN® Coated Fasteners
고내식 코팅 파스너

PRODUCT OVERVIEW:

High-performance bolts, nuts, and washers designed for extreme environments with galvanic corrosion prevention.

Land Grade: Solar & construction (250+ cycles)

Water Grade: Floating solar (350+ cycles)

Marine Grade: Offshore & coastal (500+ cycles)

KEY BENEFIT:
Matches PosMAC® potential (±0.05V) for extended system life.

SSEN ZINC Spray
쎈징크 스프레이 (N-30 / N-50)

PRODUCT OVERVIEW:

Advanced aerosol maintenance solution for on-site repair of cut edges, welds, and scratches on galvanized steel.

High inorganic content (Zn, Al, Mg)

Quick-drying MRO solution

Superior adhesion and barrier protection

KEY BENEFIT:
Extends maintenance intervals for installed infrastructure.

PosMAC® Cable Trays
케이블 트레이 시스템

PRODUCT OVERVIEW:

Corrosion-resistant cable management systems optimizing PosMAC® steel properties for electrical infrastructure.

Self-healing cut edge protection

High strength-to-weight ratio

Reduced maintenance requirements

PARTNERSHIP:
JEAWON ACE INDUSTRY (Strategic Alliance)

PosMAC® Conduits
고내식 전선관 시스템

PRODUCT OVERVIEW:

Durable electrical conduit pipes utilizing PosMAC® technology for superior protection against moisture and chemicals.

3-5x lifespan of conventional galvanized

Excellent bendability and workability

Ideal for chemical plants & coastal zones

PARTNERSHIP:
YUIL PIPE (Strategic Alliance)

Automotive Components
자동차 정밀 부품

PRODUCT OVERVIEW:

Precision-engineered automotive fasteners and components meeting strict OEM quality and durability standards.

High-strength bolt solutions (14T grade)

Hydrogen embrittlement resistant

Low friction coefficient control

PARTNERSHIP:
Taeyang Metal (TIPS Collaboration)

PosMAC® Steel Plates
구조용 강판 솔루션

PRODUCT OVERVIEW:

The foundation of corrosion-resistant structures, offering self-healing properties through Mg-Al-Zn alloy coating.

Mg-Al-Zn ternary alloy coating

Superior red rust resistance

Base material for PoSSEN application

PARTNERSHIP:
POSCO (Material Supplier & Licensor)

Proof of Concept & Traction (Key References)

Construction

DEPLOYED

POSCO

Supplied **50,000+** PoSSEN® units for new construction facilities. Field-proven durability in industrial environments.

DEPLOYED

Samsung C&T

Selected for Songdo Raemian apartment complex supply chain. Applied to critical exterior fasteners.

Floating/Marine Solar

ONGOING VALIDATION

Major Solar EPC

Multi-year performance validation in high-salinity marine environments. Monitoring corrosion resistance of structural connections.

PILOT TEST

Energy Spot

Joint testing for floating PV mounting systems. Verifying compatibility with PosMAC® structures.

Appliances

CONFIRMED

LG Electronics

Mini-Washer Leg Nut: Application confirmed for mass production. Solved corrosion issues in humid laundry environments.

UNDER REVIEW

LG Electronics

AC Outdoor Unit: Testing screws for outdoor durability against acid rain and pollution.

Automotive

R&D PROGRAM

TIPS Program

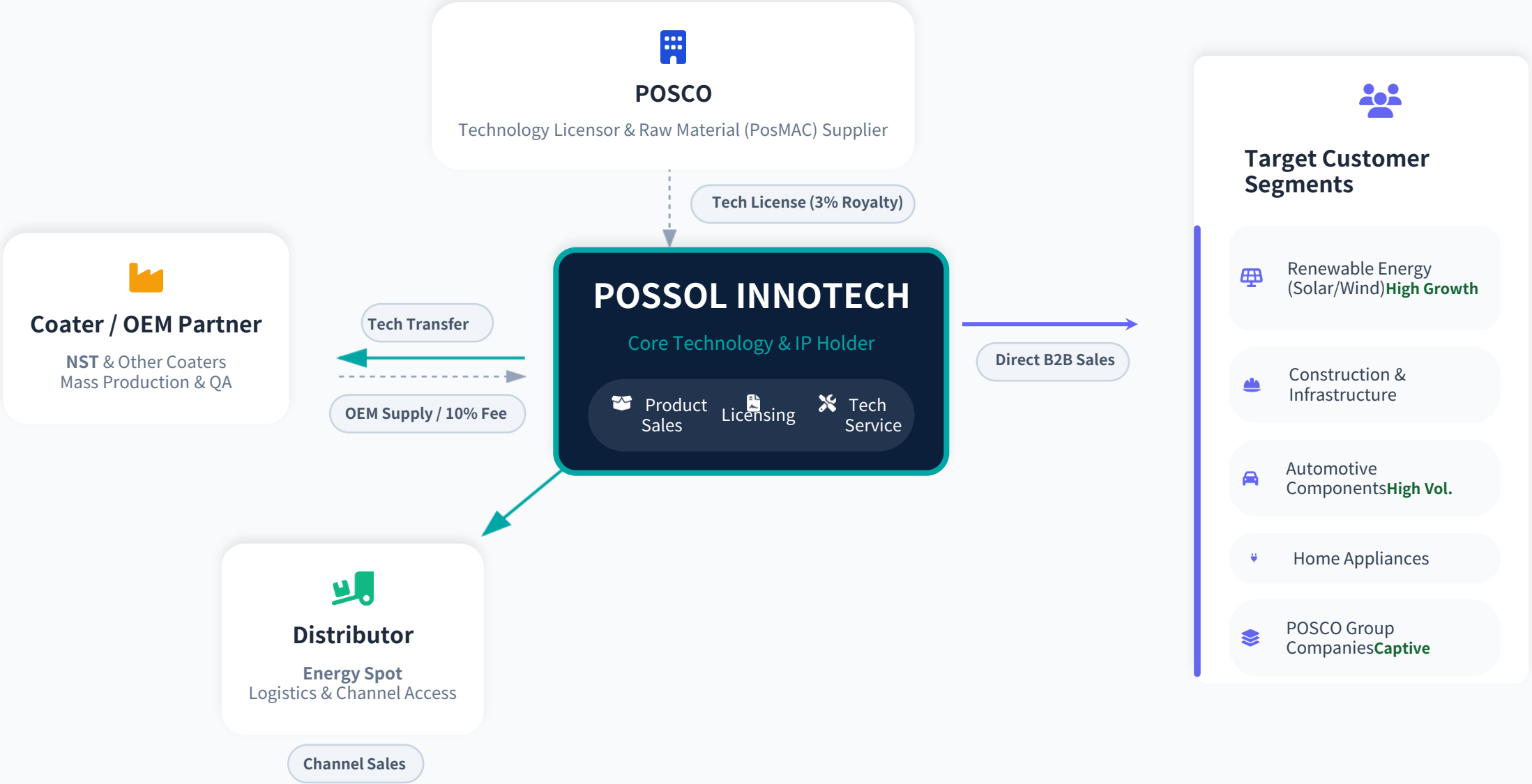
Selected for high-strength fastener development. Focusing on hydrogen embrittlement prevention.

COLLABORATION

HL Mando

Joint development for vehicle chassis components. Targeting enhanced corrosion resistance specifications.

Business Model (Value Chain & Revenue)



Roadmap & Growth Plan Strategic Milestones (2025–2031)

Phase 1: Foundation
KRW 2.8B

2025–2026

- **Market Entry:** Establish foundation in construction & renewable sectors.
- Secure initial POs from POSCO & Samsung C&T.
- Complete PoC for floating solar applications.

Funding Target

Pre-A: KRW 0.7–1.0B

Seed investment & TIPS program

Phase 2: Expansion
KRW 43B

2027–2028

- **Production Scale-up:** Build Yeoncheon BIX factory.
- Enter automotive supply chain (HL Mando partnership).
- Expand product line to cable trays & conduits.

Funding Target

Series A/B

For facility CAPEX & scaling

Phase 3: Global Leader
KRW 100B+

2029–2031

- **Global Expansion:** Market entry into UAE, North America, Europe.
- Dominate marine/offshore fastener market.
- **IPO:** KOSDAQ listing preparation.

Strategic Goal

KOSDAQ IPO

Public listing & global brand

Contact & Partnership Let's Connect

POSSOL INNOTECH

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Let's build durable, low-carbon infrastructure together.

PARTNERSHIP OPPORTUNITIES

- Distributors & Importers
- EPC Developers (Solar/Wind)
- Fastener Manufacturers
- Coaters & Surface Treaters
- Automotive & Appliance OEMs
- R&D Collaboration Partners

Schedule a Partnership Meeting →

Why Kazakhstan / Why Almaty (2026 Apr Visit)

Regional Strategic Context

Central Asia's Renewable Hub (중앙아시아 허브)

Kazakhstan serves as the gateway for renewable energy deployment across the region, with rapidly expanding solar and wind infrastructure projects.

Demand for Durability (고내식 인프라 수요)

Harsh continental climates and the shift from land to water/offshore installations drive critical demand for corrosion-resistant fasteners and structural components.

Low-Carbon Imperative (저탄소 공정 필요성)

Growing ESG mandates require sustainable materials like PoSSEN®-coated steel, utilizing low-temperature curing (200°C) to minimize carbon footprint.

Visit Objectives in Almaty

Business & Industrial Center (비즈니스 중심지)

Almaty provides the ideal base for partner meetings, pilot planning, and establishing regional distribution networks for high-durability steel solutions.

Partnership Alignment (파트너십 구축)

Engage with EPCs, fabricators, and distributors to map specific applications for PosMAC® structures and PoSSEN® fasteners.

Pilot Definition (실증 프로젝트 정의)

Identify 1-2 strategic sites for proof-of-concept (PoC) trials to validate performance in local environmental conditions.

Desired Partner Profile (Target Archetypes)

EPC / Project Developer
EPC / 프로젝트 개발사 (Solar/Wind)

THEY BRING:

Project pipeline access, site installation expertise, and direct influence on material specifications for renewable energy projects.

POSSOL PROVIDES:
PoSSEN® coated fastener packages, corrosion test protocols, and field trial (PoC) support.

Steel Fabricator
강구조 가공/제작사 (PosMAC-based)

THEY BRING:

Large-scale fabrication capacity for solar/wind structures and established supply chains using PosMAC® steel.

POSSOL PROVIDES:
Coating compatibility guidance (galvanic corrosion prevention) and application process know-how.

Fastener Manufacturer
파스너 제조사

THEY BRING:

Mass production scale, cold-forming capability, and existing customer base for standard and specialty bolts/nuts.

POSSOL PROVIDES:
Proprietary coating technology (15±5μm thickness), quality standards, and repeatability guidance.

Coater / Surface Treatment
코터 / 표면처리 파트너

THEY BRING:

Dip-spin coating lines, curing ovens, and quality assurance (QA) operations for surface finishing services.

POSSOL PROVIDES:
Inorganic formulation supply and low-temperature process optimization (≈200–250°C curing).

Cable Tray & Conduit Mfr.
케이블 트레이 / 전선관 제조사

THEY BRING:

Electrical infrastructure productization capabilities and specifications for cable management systems.

POSSOL PROVIDES:
Complete corrosion-resistant product packages and seamless integration with PosMAC® structural systems.

Distributor / Importer
디스트리뷰터 / 임포터

THEY BRING:

Market access, local warehousing, channel coverage, and support for navigating local certification requirements.

POSSOL PROVIDES:
Comprehensive technical support, marketing documentation, and proof-of-concept (PoC) collateral.