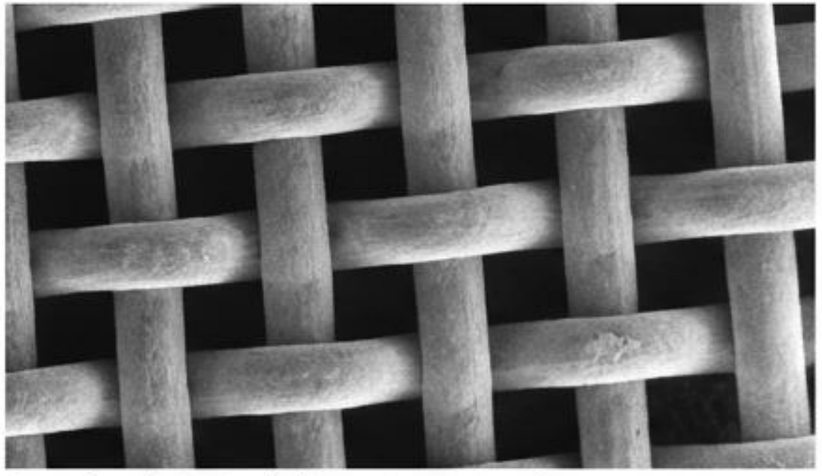
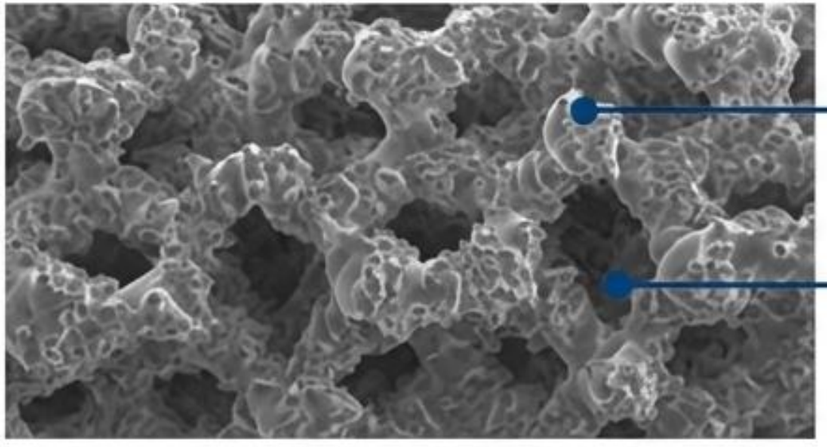
NEXT-GENERATION ELECTROCHLORINATION FOR HIGH-EFFICIENCY CHLORINE GENERATION

STRUCTURE-DRIVEN TITANIUM MESH & PTL SOLUTIONS

THE CORE INNOVATION: MICRO-SCALE ARCHITECTURE



Standard Ti Mesh (Coating-Driven)



SunGreen Nano-engineered Ti Mesh (Structure-Driven)

A paradigm shift from coating-driven performance to structure-driven electrochemistry. Fused particle-substrate interface ensures mechanical integrity without relying on heavy Ru/Ir MMO coatings.

DIAGNOSTIC COMPARISON MATRIX

	Conventional MMO / DSA	SunGreen Nano-engineered Ti
Precious Metals	Heavy reliance on Ru/Ir	Ultra-low Platinum (~0.05 g/cm²)
Core Mechanism	Coating-Driven	Structure-Driven
Scaling Tolerance	Vulnerable (flat planar surface)	Highly Tolerant (mesh minimizes stagnant zones)
Primary Degradation	Ruthenium dissolution & delamination	Highly stable (eliminates Ru mechanisms)

THE 4 PERFORMANCE PILLARS

1. Chlorine Efficiency
Uniform current distribution and reduced localized overpotentials.

2. Bubble Management
Rapid bubble nucleation and detachment reduces mass transfer resistance.

3. Scaling Resistance
High tolerance to calcium scaling critical for saltwater pools.

4. Lifetime Durability
Ultra-thin Pt layer reduces mechanical stress; designed for chloride-rich environments.

SYSTEM INTEGRATION ARCHITECTURE

SEAWATER / SALTWATER FEED → PRE-FILTRATION → **SUNGREEN ELECTROCHLORINATION MODULE (ELECTRODE + PTL)** → PURE CHLORINE GENERATION → POOL / CIRCULATION SYSTEM

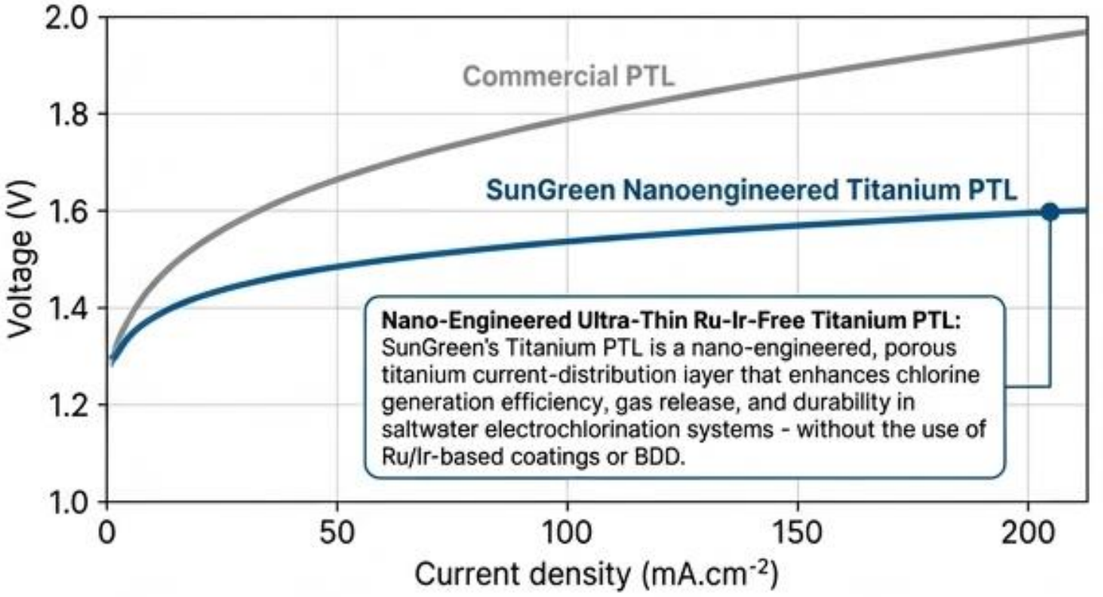
OEM SPECIFICATIONS & DATA

Operating Voltage	1.6V - 2.0V
Current Density	~0.1–0.3 A/cm² (NaCl: 3k–6k ppm)
Electrode Thickness	300 - 400 µm
Porosity / Compression	~60% / 5%
Expected Lifetime	>50,000 hours
Sample / Commercial Sizes	100 cm² / 2000 cm²

TARGET USE CASES

- Saltwater pool chlorination
- On-site chlorine generation
- Scalable modular integration into existing units (100–500 cm² plates)

PERFORMANCE EFFICIENCY



OEM ENGINEERING ASSURANCES

PLATINUM COST SOLVED
Ultra-low loading outweighs total lifecycle replacement costs of MMOs.

SELECTIVITY ASSURED
Surface engineering and operating window optimization prevent unwanted Oxygen Evolution Reaction (OER).

POLARITY REVERSAL READY
Architecture specifically designed for strict cycling demands of pools, with continuous lifetime validation.