

TECHNICAL SPECIFICATION SHEET

Q-SMEC USE CASES — NAICS 2213 WATER & WASTEWATER SECTOR

Q-SMEC (Quantum Superconducting Magnetic Energy Containment) Materials Development Framework. The 22-layer technology stack allows NIKET to custom-design advanced materials with performance characteristics several orders of magnitude better than current state-of-the-art alternatives, based on End User provided target specifications. NIKET matures a customized material through Non-Recurring TRL/MRL Levels 3–5 on internal/partner funding, and Levels 6–9 in close coordination with the Industry End User. Validated TRL/MRL Level 3 applicability to water and wastewater use cases.

01 DESALINATION MEMBRANE — TARGET SPECIFICATIONS

BASIS	Superior to oxygenated graphene; producible in monolayer and stacked multilayer
FLUX	150–200 Liter / Sq Cm / Day / MPa
SALT REJECTION	99.999% – in all 6 major salt-rejection mechanisms: size exclusion · dehydration effects · charge repulsion · pore biophysics · pore chemical solute interactions · entropic differences
NANOPORE SIZING UNIFORMITY	99.999%
DEFECTS	Near elimination of intrinsic / extrinsic defects

02 Q-SMEC SENSOR SUITE — 16 MODALITIES

pH	CHLORINE	TURBIDITY	DISSOLVED OXYGEN	VIBRATION	ACOUSTIC	PRESSURE	TEMPERATURE
HUMIDITY	FLOW	PROXIMITY	HYDROGEN SULFIDE	FLUID COMPOSITION	ELISA-QPCR		
VOLATILE ORGANIC COMPOUND	METHANE						

03 Q-SMEC OPTIMIZED SMART METER — NOTIONAL SPECIFICATION (1 OF 2)

FREQUENCY	50 or 60 Hz
OPERATING VOLTAGE	120–480 V $\pm 0.1\%$, autoranging; self-contained power supply (Q-SMEC storage system)
VOLTAGE BURDEN	<5 W max
OPERATING TEMPERATURE	–40 to 85°C under cover
HUMIDITY	Up to 95% relative humidity
STARTING LOAD	80 mA
DESIGN LIFE	10,000 operations



03 Q-SMEC OPTIMIZED SMART METER — NOTIONAL SPECIFICATION (2 OF 2)

DATA RECORDERS	4 – Active/Reactive Metrics, Energy, Demand, Power Quality, Time of Use
CHANNELS	Up to 256
LOAD DISAGGREGATION	NILM
OUTAGE DETECTION	Real time
EMBEDDED Q-SMEC SENSORS	Temperature (2) · Voltage (2) · Power (2) · Pressure (2) · Arc (1) · Tilt (1)
STREAMING SENSOR DATA	5–15 kHz samples, V/I waveform data
TWO-WAY COMMUNICATIONS	5G, 75 Mbps · ISM 902–928 MHz · 2.4 GHz
ENCRYPTION	Post-Quantum Crypto encryption; inherently anti-tamper
COMPLIANCE	ANSI C12.20
APPLICABLE DOMAINS	Front · Midlevel · Backhaul

04 DEPARTMENT OF WAR-GRADE PQC OT/CIP CYBERSECURITY

SCOPE	Post-Quantum Cryptography for Operational Technology / Critical Infrastructure Protection
REFERENCE	SRP Cyber Resilience Pilot Proposal (34 pages)
IN COORDINATION WITH	Blue Ridge Networks Inc · High Entropy Security Inc · Black Fur Inc

05 WARGA-DESIGN FIRE-TUBE STEAM / HOT-WATER BOILER

HERITAGE	Patented design; 25+ year operational history at Tucson Medical Center
DESIGN BASIS	Eliminates inherent drawbacks of traditional 2/3/4-pass wetback/dryback designs
FURNACE	Optimized furnace volume, including a pressurized door
TUBE CONFIGURATION	Heat-transfer-dynamics analytical optimization
FLUE GAS	Velocity ranging for maximum heat-exchange efficiency, even at partial loads
HEATING SURFACE	50% reduction in heating surface area
COST IMPACT	Significant reduction in acquisition, installation, operation & maintenance costs

Engagement: use-case by use-case, NDA-gated. Alex Dely — Co-Founder · CTO · Principal Investigator — A.Dely@niketllc.com · Sal Dely — Co-Founder · Operations and Systems Lead — S.Dely@niketllc.com. Explore the full Q-SMEC framework at www.niketllc.com.