

ICARUS DYNAMICS LLC

Mechatronics R&D | Precision Instrumentation | Unmanned Systems Integration

CAPABILITY STATEMENT

CORE COMPETENCIES

Icarus Dynamics builds the engineering layer that carries a sensor into the field: the platform integration, embedded control, and autonomy around it, and the precision sensing front-end inside it.

- **Unmanned / robotic platform integration.** Sensor payload integration, embedded control, power and data architecture, and control systems for UGV / UAS.
- **Precision electrochemical instrumentation.** Electrochemical impedance spectroscopy (EIS) and potentiostat design: analog front-end, excitation and measurement chain, noise budget, IC selection.
- **Embedded systems and PCB design.** KiCad schematic and layout, microcontroller firmware, precision analog front-ends.
- **Additive manufacturing and rapid prototyping.** Functional fixtures, enclosures, and mechanism prototypes (Crealty K1C).
- **Soft robotics and electrokinetics.** Compliant mechanisms and electroosmotic pump (EOP) development.

DIFFERENTIATORS

- **Bridges sensing and platform.** Builds both the electrochemical sensing front-end and the embedded control layer that carries it. Not a pure integrator. Not a pure chemist.
- **Graduate-level instrumentation rigor.** Designs documented down to the noise budget and component-selection rationale.
- **Full digital thread in-house.** Design (KiCad, Fusion 360, OpenSCAD) through fabrication (additive) under one roof.
- **Direct principal engagement.** Fast prototype turnaround, no layered management overhead; additional engineering capacity available when scope requires.

RELEVANT EXPERIENCE

- Designed and documented a research-grade EIS potentiostat: analog front-end, measurement chain, noise budget, and IC selection rationale.
- Developed electroosmotic pump (EOP) hardware for electrokinetic fluid handling.
- Independent, self-funded mechatronics R&D. Texas A&M mechatronics engineering background.
- New federal entrant. No prior federal contract performance.

COMPANY SNAPSHOT

UEI	YN8GEFDBFPG8
CAGE	20G03
Type	Small Business (self-certified)
Clearance	None
Location	Bryan, TX 77802
SAM.gov	Active

NAICS CODES

- **541330** – Engineering Services
- **541715** – R&D in Physical, Engineering & Life Sciences
- **334515** – Instrument Mfg: Measuring & Testing Electricity / Signals

IDEAL WORK

- Sensor-to-platform integration (UGV / UAS)
- Embedded / PCB prototyping
- Precision instrumentation design
- 3D-printed fixtures and enclosures
- SBIR / STTR / BAA (early TRL)

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