

PHARMACEUTICAL, BIOTECH & LIFE SCIENCES

TAI has an enviable track record providing Engineering, Management and Technical Services to the **Pharmaceutical, Biotech and Life Sciences Industries**. Many of TAI's core competencies were developed specifically to service the unique demands of these markets. Our extensive technical expertise has enabled our clients to design, build, operate and maintain world class facilities over the last 30 years.

TAI is headquartered in Baltimore, MD, and has offices in Dallas, TX and Wilmington, DE.



ENGINEERING

- Process & Mechanical
- Buildings & Facilities (MEP)
- Electrical, Instrumentation & Controls
- Automation & Systems Integration
- Packaging & Filing
- Structural & Civil



MANAGEMENT

- Project Management
- Construction Management
- Design-Build & Turnkey Solutions
- Process Equipment Management
- Owner's Representation
- Staff Augmentation



TECHNICAL SERVICES

- Metrology & Calibration Services
- 3D Scanning
- Site Safety
- Mechanical, Electrical and Steel Construction

SERVICES

- * Preliminary & Detailed Engineering
- * Scope Development
- * Construction Cost Estimation
- * Master Planning
- * Project Economic Analysis
- * Equipment Sizing & Selection
- * Start-Up
- * Commissioning & Validation
- * Facility Documentation
- * Peer Review
- * Calibration Program Development
- * Electronic Calibration Lab Services

CERTIFICATIONS

ISO / IEC 17025:2005 (International)
ANSI / NCSL Z540-1-1994 (National)

CONTACT

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Suite 300, Owings Mills, MD 21117
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NOTABLE PROJECTS

■ Plant Monitoring and Controls Upgrades



TAI provided engineering services to upgrade outdated plant monitoring and control systems. TAI developed a 13-step plan and installed "FactoryTalk" on the existing server cluster. The controls upgrade scope included development of the project specification (URS), installation and testing on two virtual machines, migration of programming software to a VM, implementation of Win911 onto servers, installation of Historian & migration of Vantage Point, and validation support.

CLIENT: GLOBAL LIFE SCIENCES CDMO
MARKET: Pharmaceutical & Life Sciences
LOCATION: Baltimore
SERVICES:

- Monitoring and controls
- Engineering Services

COMPLETED: 2015
VALUE CLASS: <\$1MM

■ Instrumentation & Controls Calibration & Testing



Parsons & Fluor needed calibration and testing for all field instrumentation and control loops associated with their plant expansion in Frederick, MD. TAI provided all NIST Calibration Standards, calibration consumables, a project manager, lead calibration technician, and 14 field service technicians to complete the fast track project during a 10-month time frame.

CLIENT: PARSONS & FLUOR
MARKET: Biopharmaceutical & Life Sciences
LOCATION: Frederick, MD
SERVICES:

- Project Management
- Electronic Calibration Lab Services
- On-Site Field Services

COMPLETED: 2014
VALUE CLASS: <\$1MM

■ Lab and Manufacturing Facility Design



TAI provided mechanical/plumbing, electrical and process engineering, and commissioning for new R&D and manufacturing facilities in Gaithersburg, MD (160,000 SF) and San Jose, CA (48,000 SF). The project scope included ISO 6 manufacturing clean rooms, ISO 7 and 8 support spaces, climate-controlled warehouse, QC and PD Laboratories, and office renovations. Engineering included custom rooftop air handling units, custom exhaust air handling

units, energy recovery, N+1 water cooled chiller and hot water plants, upgraded electrical service, total 1750 KW generator backup, multiple RO/DI pure water systems, WFI generation and distribution system, clean steam generation, laboratory compressed air, vacuum, carbon dioxide, and bulk liquid nitrogen systems.

CLIENT: CONFIDENTIAL
MARKET: Manufacturing
LOCATION: Gaithersburg, MD and San Jose, CA
SERVICES:

- MEP Engineering
- Process Engineering
- Commissioning

COMPLETED: 2020
VALUE CLASS: >\$1MM

■ Office Improvements - Construction Permit Drawings



TAI provided engineering, design and CAD documentation services required to complete construction permit drawings for new open and enclosed office space, conference space, and copy/pantry areas totaling approximately 26,000 SF. TAI also provided engineering and design services for a GMP manufacturing space, north wing office, and QC laboratories. The areas included the LV production suites and grey space identified during the concept design on the first floor.

CLIENT: CONFIDENTIAL
MARKET: Buildings & Facilities
LOCATION: Baltimore, MD
SERVICES:

- Engineering Design
- CAD Documentation
- Commissioning

COMPLETED: 2014
VALUE CLASS: <\$1MM