

# ADVANCED TECHNOLOGIES

ENGINEERING  
PRE-CONSTRUCTION  
FABRICATION  
INSTALLATION



**Murray Company**  
MECHANICAL CONTRACTORS

[www.murraycompany.com](http://www.murraycompany.com)

MISSION CRITICAL • MICRO-ELECTRONICS • SOLAR THIN FILM PV • LED • FOOD & BEVERAGE • NANOTECHNOLOGY • BIOTECHNOLOGY • BIO-FUELS

# ABOUT



Proven experience in conjunction with fully-equipped fabrication facilities and extensive engineering expertise, Murray Company is the Southwest's leading full service Mechanical Contractor, specializing in biopharmaceutical and semiconductor.

## MISSION

Murray Company is committed to being the most respected, sought after mechanical contractor and engineers, providing value added services while creating successful partnerships with each of our clients. We want our clients to feel the need to share with others the great experience they have had with Murray Company. We provide a strong family atmosphere that is based on hard work, safety, honesty and pride of ownership.

## ESOP

Murray Company is 100% Employee Owned through our Employee Stock Ownership Program (ESOP).

- We encourage an innovative and entrepreneurial spirit.
- In 2002 Murray Company became 100% employee owned. All stock is owned by our active employees through their ESOP Retirement Plan.
- In a recent professional survey, 91% of our employees stated they were highly satisfied or satisfied with their employment.
- Personal motivation to ensure that each and every project succeeds.

## SAFETY

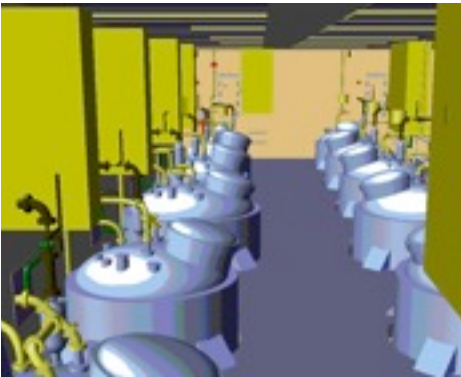
At Murray Company our commitment to safety is above and beyond compliance.

- ✓ We have an effective safety culture that uses empowerment as its core.
- ✓ Everyone who works for us has the right and obligation to take the appropriate action if an unsafe condition is discovered.
- ✓ Our training program is continuous.
- ✓ Daily pre-task planning beginning at the start of the shift giving every crew-member the opportunity to express any safety concerns associated with the day's scope.
- ✓ In-house certified trainers for CPR, First Aid, forklift certification, scissor lift certification, competent person certification.
- ✓ Bi-yearly Supervisor's Safety Meetings.
- ✓ Over 150 Foremen and Supervisors with OSHA 30 hour certification.





# DESIGN & COORDINATION



*We create 3D models not only to coordinate our own piping fabrication, we also conduct walkthrough model reviews with our customer's operations personnel for accessibility and maintenance to instruments and valves.*

Our modeling capabilities coupled with our unparalleled level of experience increases fabrication, accuracy, reduces over-all time and most importantly cost with the latest industry software and state of the art hardware.

- CAD detailing for 18 years, 3D Modeling for 16 of those years.
- Currently 95% of all of our projects are detailed using our 3D coordinated BIM process.
- Over 50 detailers with an unparalleled level of experience.
- Over 40 licensed modeling stations complete with collision software.
- More than half of our detailers have been with us well over 10 years, and more than a dozen for as long as 15 to 20 years.
- Murray Company maintains licenses for:

#### Autodesk®

- ✓ AutoCAD® Architecture
- ✓ AutoCAD® Mechanical
- ✓ AutoCAD® Structural
- ✓ AutoCAD® Detailing
- ✓ AutoCAD® MEP
- ✓ AutoCAD® Civil 3D®
- ✓ Navisworks® Simulate
- ✓ Navisworks® Manage

- ✓ Inventor®
- ✓ Revit® Structural
- ✓ Revit® Architectural
- ✓ 3ds Max® Design
- ✓ CADmep™ Fabrication

#### QuickPen®

- ✓ PipeDesigner 3D®

- We are engineers first with in-house designers that work hand in hand with our detailers.
- Creating design build solutions from the ground up with our In-house design engineering.

# FABRICATION



Our state-of-the-art 20,000 square foot fabrication facility is dedicated to both our biopharmaceutical and semiconductor services.

- ✓ ISO Class 4 (Class 10) certified cleanroom for ultra high purity fabrication with raised floor and laminar air flow.
- ✓ ISO Class 5 (Class 100) certified cleanroom gowning room.
- ✓ ISO Class 6 (Class 1000) certified cleanroom prep room.
- ✓ Certified High Purity Fixed Tank Bulk Gas Argon and Nitrogen systems. Purified and filtered to .003 micron less 0.7 PPB.
- ✓ Certified High Purity Fixed Tank Bulk Gas Nitrogen System Purified and Filtered to .003 Micron.
- ✓ Certified PVDF RO/DI Generation System producing 2,000 liters of 18.2 mega ohm, 80 degree celsius high purity hot de-ionized water which supplies two part cleaning stations both equipped with hot nitrogen for blow down, cleaning, and packaging in accordance with NFPA 99C and CGA-4.1 "Cleaned for Oxygen Service" requirements.
- ✓ Twelve Orbital Welding Stations.
- ✓ Twelve TIG Welding Stations.



- ✓ Four PVDF and PP Welding Stations.
- ✓ Over 30 Orbital welding machines ranging in sizes capable of welding as small as 1/8" OD tubing to an unlimited diameter pipe size.
- ✓ State-of-the-art tube/pipe cutting and facing equipment tailored to high purity process piping.
- ✓ Autodesk's AutoCad® Viewing and Navigation Station to view 3D Modeling and Fabrication Drawings.



# SEMICONDUCTOR

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Whether it's providing tool hookup services for semiconductor manufacturing, installing base build infrastructure for a new electronics facility or expansion of an existing facility our experienced team can add value in completing your project on time while being mindful of budget.

## SYSTEMS

- |   |                                 |
|---|---------------------------------|
| ✓ Ultra Pure Water Systems              | ✓ Vacuum Systems                |
| ✓ Slurry and Bulk Chemical Distribution | ✓ Process Utilities             |
| ✓ Bulk, House, and Specialty Gases      | ✓ Process Cooling Water Systems |
| ✓ Solvent and Specialty Waste Systems   | ✓ Chilled and Hot Water Systems |

## EVIDENCE OF OUR SUCCESS

- |                                   |  |
|-----------------------------------|--|
| • Western Digital Corporation     | • USC Photonics Department   |
| • Motorola                        | • Skyworks Solutions   |
| • Applied Materials               | • JPL (Jet Propulsion Laboratory)  |
| • Tower Semiconductor (TowerJazz) | • Northrop Grumman   |
| • Spectra Laboratories            | • World's Leading Microprocessor<br><i>(name must remain confidential)</i> |



# BIOPHARMACEUTICAL

FOOD & BEVERAGE • BIOTECHNOLOGY • LIFE SCIENCE • BIOFUELS



Murray Company's superior reputation in the pharmaceutical and biotech industry was built on professionalism, hard work, integrity, and innovation.

Whether it be fast track Design Build, Design Assist, or Plans and Specifications, our Engineering and quality teams will customize a plan to execute a project.

Our Advanced Technology team has a proven track record in process system fabrication and installations for well over 20 years. Our Quality Assurance Program insures that we have the necessary controls in place to meet or exceed compliance requirements of our FDA regulated clients.

With proven Standard Operating Procedures (SOPs) tailored for FDA compliance or cGMP facilities, we take pride in offering an electronic turnover package (eTOP)\* that has been repeatedly praised by our clients for the ability to help expedite system validation and Establishment Licensure.

## SYSTEMS

- |                |                          |                   |
|----------------|--------------------------|-------------------|
| ✓ CIP/COP      | ✓ Clean Compressed Air   | ✓ Product/Process |
| ✓ USP WFI      | ✓ Bio Waste Inactivation | ✓ Process Waste   |
| ✓ USP Purified | ✓ Pure Steam/SIP         | ✓ Process Gases   |

## EVIDENCE OF OUR SUCCESS

- |                        |                        |
|------------------------|------------------------|
| • Amgen                | • B. Braun Medical     |
| • Genentech            | • Baxter International |
| • Edwards Lifesciences | • Bristol-Myers Squibb |



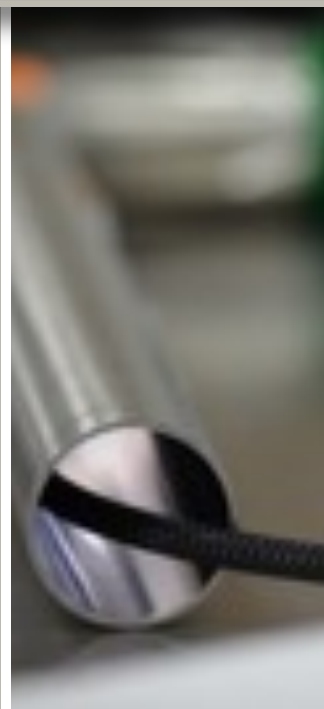
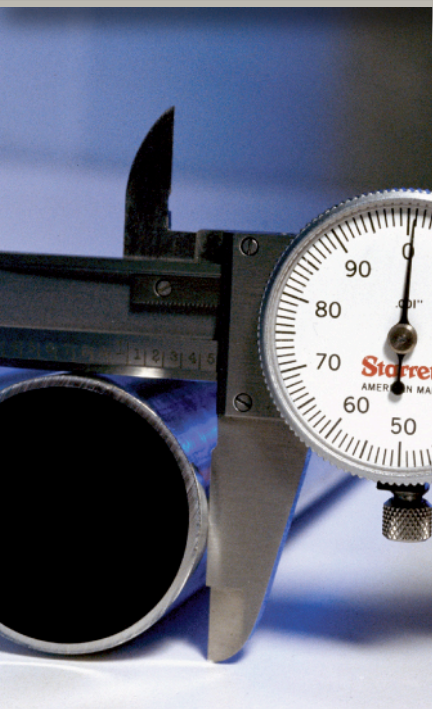
**eTOP**  
Electronic Turnover Package (eTOP) by Murray Company Mechanical Services

Our user-friendly, paperless \*Electronic Turnover Package (e-TOP) enables

any user the ability to quickly navigate through system documents with the use of searchable indexes and hyperlinks. Our value-added e-TOP will expedite and streamline the validation and qualification process duration by delivering accurate, high-quality documents with just a easy click of a mouse.



# QA/QC



Our Quality Assurance and Quality Control team have developed Standard Operating Procedures (SOPs) for process and process utilities to ensure compliance with the following:

- |            |         |                 |                        |
|------------|---------|-----------------|------------------------|
| ✓ ANSI/AWS | ✓ AWWA  | ✓ UPC           | ✓ NFPH 99, 99c and 13  |
| ✓ USP      | ✓ OSHPD | ✓ UMC           | ✓ ASME (including BPE) |
| ✓ CFR      | ✓ SEMI  | ✓ CDC/NIH       |                        |
| ✓ FDA      | ✓ UBC   | ✓ ISPE Baseline |                        |

## In-House Inspection Equipment:

- |                     |                                  |
|---------------------|----------------------------------|
| ✓ Borescopes        | ✓ Trace Oxygen Analyzers         |
| ✓ Profilometers     | ✓ Trace Moisture Analyzers       |
| ✓ Dial Calipers     | ✓ Helium Leak Detectors          |
| ✓ Dial Indicators   | ✓ X-Ray Fluorescents (Niton Gun) |
| ✓ Particle Counters |                                  |

## Trained in and Certified as:

- |   |                                  |
|---|----------------------------------|
| ✓ ASME Level II Visual Testing (VT)<br>Training and Certification SNT-TC-1A | ✓ Magnetic Particle Testing (MT) |
| ✓ Radiographic Testing (RT)   | ✓ Leak Testing (LT)              |
| ✓ Ultrasonic Testing (UT)   |                                  |
| ✓ Liquid Penetrant Testing (PT)   |                                  |

## Certifiers in:

- |  |                             |
|--|-----------------------------|
| ✓ ASME BPVC Welding and Brazing<br>Qualifications Section IX | ✓ PP Socket Fusion Welders  |
| ✓ PVDF Socket Fusion Welders                                 | ✓ PP Butt Fusion Welders    |
| ✓ PVDF Butt Fusion Welders                                   | ✓ PVC Socket Fusion Welders |
| ✓ PVDF Butt (BCF) Fusion Welders                             |                             |





## Murray Company

MECHANICAL CONTRACTORS

Proven experience in conjunction with fully-equipped fabrication facilities and extensive engineering expertise, Murray Company is the Southwest's leading full service Mechanical Contractor.

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### San Diego Branch

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Hayward, CA 94545

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Visit [www.murraycompany.com](http://www.murraycompany.com) to learn more about our core competencies.