

# CUSTOM EQUIPMENT SOLUTIONS

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## Life Sciences Solutions

CUSTOM EQUIPMENT SOLUTIONS CO.  
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(704) 845 - 0755

Custom Equipment Solutions (CESCO) offers the most complete line of process & utility equipment solutions for the life sciences industry in the southeastern United States.

CESCO partners with industry leading design/supply/service companies, with global experience in the biopharmaceutical industry.

We add value, based on many years of varied project work, incorporating lessons-learned from each project. We specialize in consultative selling, bringing the best recommendations from project references where we have interfaced with world-class end-users, and engineering companies.



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5400 International Trade Drive  
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[www.alleghenybradford.com](http://www.alleghenybradford.com)  
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(800) 542-0650



[www.dec-group.net](http://www.dec-group.net)  
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# EKATO

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## ferrum

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## IPEC

Integrated Process Engineers & Constructors, Inc.

[www.ipec-inc.com](http://www.ipec-inc.com)  
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(920) 568-0475



## STERIDOSE®

[www.steridose.com](http://www.steridose.com)  
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[www.silverson.com](http://www.silverson.com)  
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East Longmeadow, MA 01028  
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CESCO  
PARTNERS  
WITH  
INDUSTRY  
LEADING  
COMPANIES  
TO  
SIMPLIFY  
LIFE  
SCIENCES.

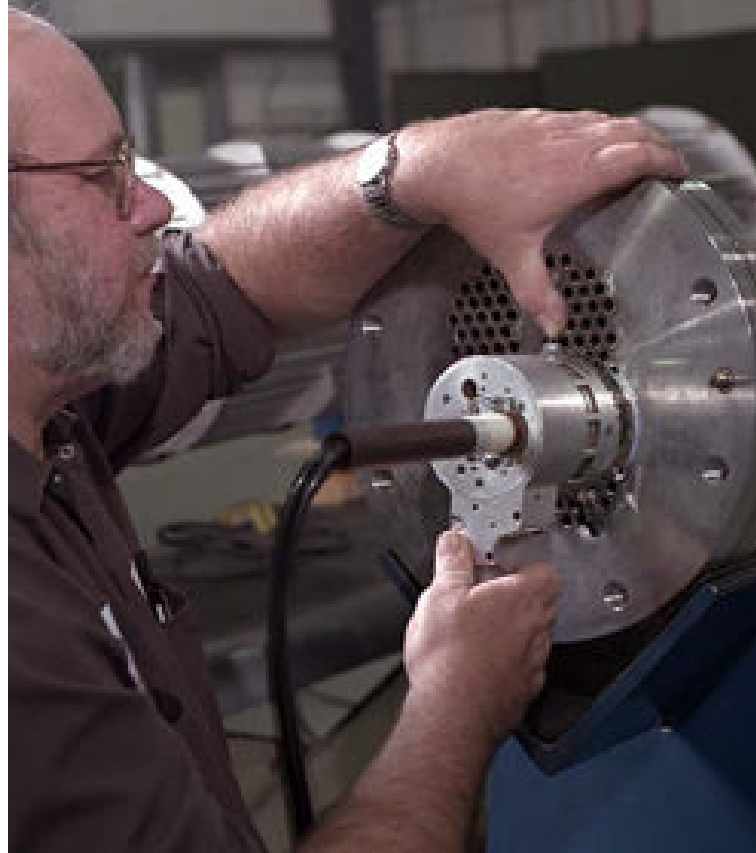
# SUMMARY OF PRODUCT OFFERINGS

## Components:

- Tanks; Storage, Process
- Utility Top & Bottom-driven Mixers
- Bottom Outlet Valves
- Sample Valves
- Spray Balls, Retractable CIP Spray Nozzle, Rotary Spray Nozzles with Counters
- Sanitary Filter Housings
- Vacuum Pumps & Roots Blowers
- Transfer Panels & Valve Clusters
- Custom designed manifolds, spool pieces, & piping configurations
- Sanitary Shell & Tube Heat Exchangers
- Plate Heat Exchangers
- ASME BPE-Compliant Mechanical Seals for Mixers
- Custom/machined stainless steel fabrications
- Quick-release sanitary bayonet sight glasses
- Low-profile aseptic mounting flanges
- COP Baths

## Skids:

- Bulk & HTST Pasteurization
- Seed & Production Fermenters & Bioreactors
- Harvest Hold
- Centrifuge
- Homogenizer
- Filtration
- Chromatography
- Inactivation
- Clean-In-Place (CIP)
- Clean-Out of-Place (COP)
- WFI Storage & Distribution
- Purified Water Generation, Storage & Distribution
- RO-EDI
- Bio-Kill
- Waste pH Neutralization



## Containment Solutions:

- Powder Transferring
- Filling
- Emptying
- Dosing
- Blending
- Sampling
- Milling
- Micronizing
- Containment Isolators
- Aseptic Isolators

## Modular Plants:

- Media Prep
- Buffer Prep
- Fermenter Trains
- Formulation & Sterile Storage
- Large Tank/Platform Systems

## Field Service:

- Stainless Steel Passivation
- Pickling/Chemical Cleaning
- Electro-polishing
- Passivation
- Mechanical polishing
- Vessel Refurbishment

# Heat Transfer



Above: Allegheny  
Bradford Sanitary  
Shell & Tube  
Heat Exchanger



Left: Alfa Laval Plate  
Heat Exchanger

# Tank, Spray Ball & Sampling



Allegheny Bradford  
Sanitary Tanks for  
Process & Utilities  
(above), sample valves  
(top right), Steam-  
sterilizable bottom  
outlet (Bottle right)

# COMPONENT SOLUTIONS

CESCO offers industry leading heat transfer solutions for both sanitary and non-sanitary applications. Whether your application calls for WFI drop cooler shell and tube exchangers, or utility side plate & frame type efficient exchangers, CESCO has a solution.

CESCO provides high quality tanks & spray ball solutions for storage and process applications. Surface finishes down to 5 Ra are available, and a cradle-to-grave field electropolish service plan to keep your tanks like new. Acceptance tests routinely include riboflavin testing to validate cleaning programs

# COMPONENT SOLUTIONS

CESCO offers a variety of mixers and agitators from Silverson, Steridose and Ekato for sanitary and non-sanitary applications.

CESCO offers industry-leading sanitary filter housing solutions, including designs that are self-draining and CIP-able. You will not have to disconnect any piping to clean or steam in place.

## Mixers & Agitators



Ekato Allrounder agitator (left), Silverson bottom mount High-Shear mixer (middle), Silverson sanitary in-line high-shear mixer (top right), & Steridose Bottom Mag-drive Mixers (bottom right)

## Filter Housings



Allegheny Bradford's Opti-Clean S™ Single-Round Drainable Filter Housings (above) & Universal Series® Filter Housings (right)





# IPEC

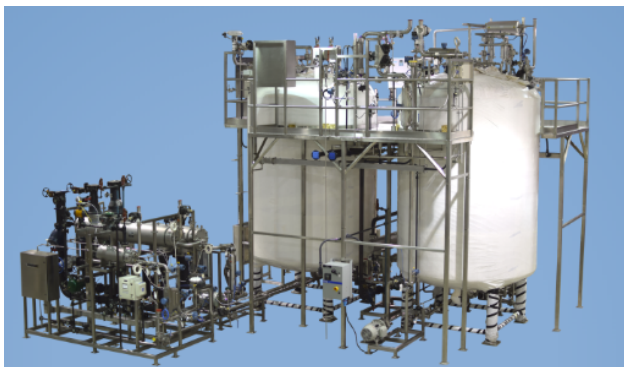
Integrated Process Engineers & Constructors,



IPEC Buffer Prep Super Skid System



IPEC Batch Bio-Waste Inactivation System



IPEC Purified Water Distribution & Storage

## MODULAR PLANT SOLUTIONS

The IPEC Buffer Prep Super Skid System (top left) prepares buffers for various stages of processing, at the 500–3,000 liter scale. The design includes all vessels, agitators, vent filters, and in-line mixers in addition to an access platform complete with stairs, material handling systems for each in-line mixer and all instrumentation and piping needed to operate the system and meet user requirements.

The IPEC Batch Bio-Waste Inactivation System (second from top) receives waste, and it sequentially fills one of three tanks. Once a high level set point has been reached in a tank, flow is automatically directed to the next available tank. The inactivation system heats the contained waste in the tank, holds it at the inactivation temperature for a timed period, cools the waste to a set point and then discharges the waste from the system.

# MODULAR PLANT SOLUTIONS

IPEC's 3-module Formulation Plant is designed to receive totes of material fermented at an overseas plant, and formulate customized mixtures to meet specific customer requirements. The system was designed to be moved to another (remote) location near the end-user base, once proof-of-concept was completed at a headquarters plant (top left). The interior of this IPEC modular plant includes mass-flow meters, static mixers, sanitary heat exchangers & instrumentation to make the custom "cocktails" (top right).

This IPEC turnkey Formulation and Sterile Storage System (below) is the wet-end in front of a fill-line and consists of 3 x 2000 liter and 2 x 300 liter formulation tanks, 3 x 2000 liter sterile storage tanks, 2 x 2-tank CIP systems and (14) tank process/utility piping modules. The utility modules were designed and constructed to allow for the addition of 6 x 2000 liter formulation and sterile storage tanks in the future.

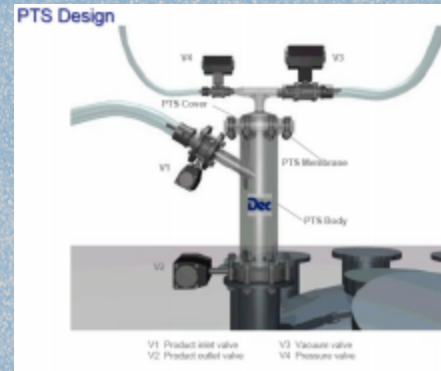
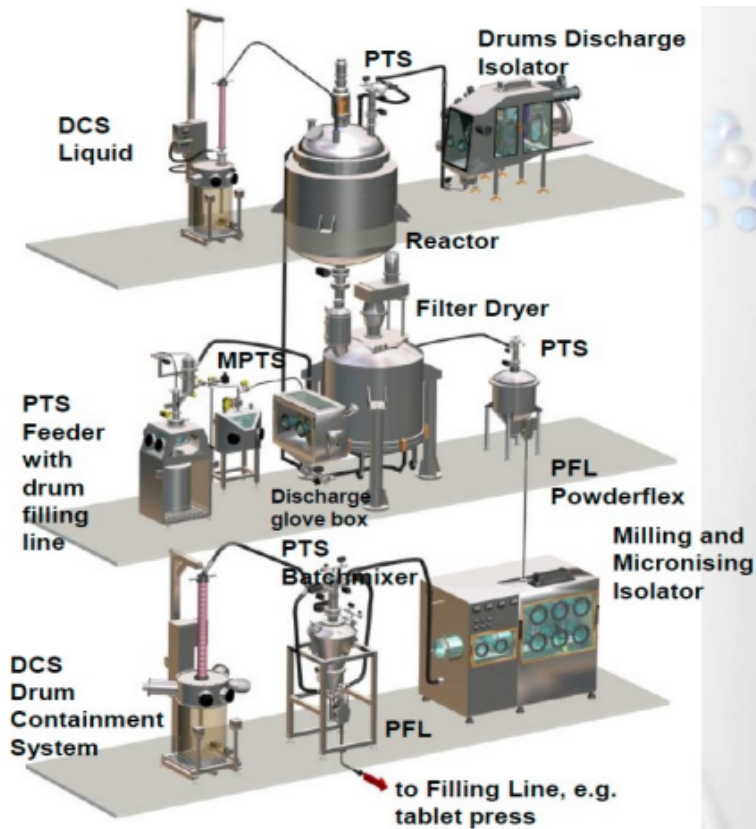


IPEC 3-module Formulation Plant outside & inside



IPEC Turnkey Formulation & Sterile Storage System

# CONTAINMENT & MICRONIZING



DEC Research Scale Micronizer



DEC Micronizer/Isolator Plant for Sterile Powder

The DEC Group API Containment & Powder Handling Solutions



# SKID SOLUTIONS

- Project Management
- Process Engineering
- Mechanical Engineering
- Electrical Engineering
- Automation
- Testing & Inspection
- Field Installation

CESCO has proven experience with most of the major bio-pharmaceutical companies, and have supplied equipment to many FDA-regulated sites all over the world. Whether you are in Boston, Singapore, South Francisco, Research Triangle Park, Ireland, or Puerto Rico you can find equipment that CESCO has sold.

HTST Systems are a popular choice for pasteurization of upstream solutions. They are designed to heat and hold product at a defined temperature and duration prior to cool down, in order to ensure complete inactivation of microorganisms contained within solution. They can incorporate thermally efficient, continuous throughput designs, with the possibility of regenerative heating and cooling.

Our systems can be designed for compatibility with multiple third party columns and membranes. Other suppliers offer pre-engineered systems with operational limitations, our customer driven approach is aimed at delivering systems that meet your exact requirements.



IPEC UF-DF Skid System (left) & IPEC High-Temp Short-Time (HTST) System (right)



IPEC Pilot Seed Fermenter Systems (above)



IPEC Two-tank Clean-In-Place (CIP) (above)

We offer the following types of filtration skids:

- Microfiltration (MF)
- Tangential Flow Filtration (TFF)
- Ultrafiltration (UF)
- Diafiltration (DF)
- Nanofiltration (NF)
- Reverse Osmosis (RO)

# Batch Centrifuges for API's

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Ferrum's centrifuge type VBC-S



Horizontal Pharmaceutical centrifuges HPZ

The Vertical Bottom discharge Centrifuge – Swivel Open Housing (top) was specially designed for use in the demanding pharmaceutical industry. The centrifuge housing can be swivelled open completely, which permits excellent inspection outside and below the centrifuge basket. Additionally, the optional cover opening permits best inspection of the internals in the centrifuge cover.

The applications for pharmaceutical centrifuges Horizontal Pharmaceutical Centrifuge (second) range from pilot plants and low volume production to production applications in the demanding pharmaceutical industry.

**ferrum**

# Batch Filters, Filter-Dryers & Vacuum Dryers

3v Techs' Cogeim, has been a leading worldwide supplier of solid – liquid separation and vacuum drying equipment to the pharmaceutical, fine chemical and chemical industries.

Glasscoat is the newest production unit of the 3V Tech. A brand new glass lining facility was established in 2008 in Noventa di Piave near Venice, Italy. The company's primary glass, G2208, is useful in acidic applications due to its resistance to corrosion.



G2208 distinguished by higher thermal shock resistance and smoother surface finish than other glasses.



Nutsche Pressure Filter-Dryer



Paddle Dryer – Steridry ES

# FIELD SERVICES



Plate Heat Exchanger cleaning, leak checking, and regasketing services from Alfa Laval



AST On-Site Services can include:

- Electro-polishing
- Mechanical Polishing
- Citric Passivation
- Nitric Passivation
- Complete Vessel Refurbishment
- ASME Code Welding
- Vessel Assessment
- Level II Inspection
- Liquid Penetrant testing
- Surface Measurement readings (Ra)
- Borescope inspections
- Documentation Package & Mapping

CESCO offers a one-stop shop for all on site mechanical, electro-polishing, and ASME-R stamp code work from Allegheny Surface Technology. Need a nozzle moved on a sanitary tank, or need a jacket repaired?

CESCO offers turnkey on-site services from Allegheny Surface Technology (AST) to address your stainless steel equipment refurbishment needs. Each AST on-site team follows all federal, state, and site-specific safety regulations. All necessary inspections and testing is performed and documented.

The AST work teams possess the ability to provide field services with the experience, service, and quality as if the shop is brought to you. Each technician has completed all OSHA-required training needed to complete work tasks. Safety training is completed annually and will be reviewed before each job to ensure a complete understanding of the requirements and possible hazards associated with your work requirements.