

# COMPLETE OFFERINGS



THERMAL PROCESSING



AGGLOMERATION



MATERIAL HANDLING



PARTS & SERVICE



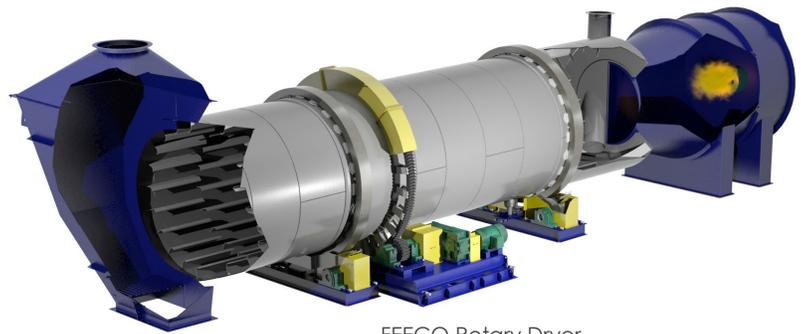
THE INNOVATION CENTER

## ABOUT

FEECO International, Inc. was founded in 1951 as an engineering and equipment manufacturer. Today, we provide an array of process solutions, equipment, and services to companies looking to solve material problems, develop advanced processes, and streamline production. We've built a reputation on custom, quality work that has allowed us to serve thousands of companies around the world with the best in agglomeration, thermal processing, material handling, and fertilizer production equipment.

FEECO is recognized globally as an expert in providing:

- Custom Equipment Manufacturing
- Engineering
- Feasibility/Materials Testing
- Process Design & Development
- Process Optimization
- Product Development
- Service (Equipment, Full Process Facilities)
- Tolling



FEECO Rotary Dryer

## WHO WE WORK WITH

FEECO's expertise has been sought by everyone from start-ups to Fortune 100 companies seeking innovative solutions in process design, engineering, and manufacturing for a variety of industries. Some of these companies include:





## THERMAL SYSTEMS

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### THERMAL EQUIPMENT

- Rotary Dryers
- Indirect Rotary Dryers
- Rotary Coolers
- Indirect Rotary Coolers
- Direct-Fired Kilns
- Indirect-Fired Kilns
- Batch Kilns

We provide complete thermal processing systems, or stand-alone units for a variety of bulk solids processing applications, including drying, cooling, calcination, heat setting, organic combustion, and more. A complete system can include everything required for the treatment of a given material, from feed handling and metering, to exhaust gas-cleaning equipment. A variety of control systems are available, from a simple single control loop in a microprocessor, to a sophisticated PLC-based system with multiple control loops. All of our designs are developed with efficiency, durability, and process flexibility in mind.

Our thermal systems can be engineered in virtually any configuration; parallel flow or counter current flow, direct- or indirect-fired, and for use with a variety of fuel sources, such as natural gas, oil, steam, waste heat, diesel, etc.

## AGGLOMERATION SYSTEMS

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### AGGLOMERATION EQUIPMENT

- Agglomeration Drums
- Rotary Drum Granulators
- Disc Pelletizers
- Pug Mills/Paddle Mixers
- Pin Mixers
- Compactors
- Briquetters

Whether the purpose is to eliminate dust and fines, convert a waste to a marketable product, or improve product characteristics, we can engineer and manufacture an agglomeration system to create a highly efficient process that meets your project goals. We are experienced in both non-pressure and pressure agglomeration techniques and can provide you with a single piece of equipment, or a complete process system.

## MATERIAL HANDLING SYSTEMS

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### MATERIAL HANDLING EQUIPMENT

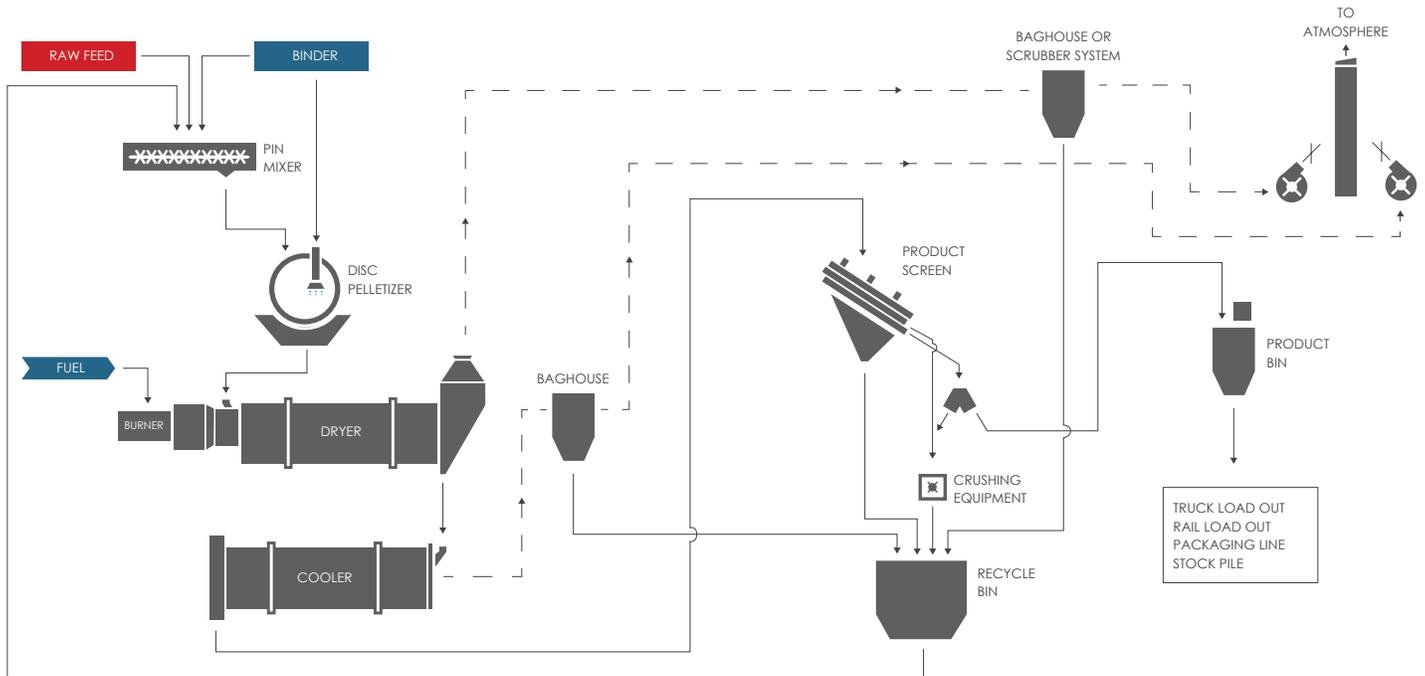
- Belt Conveyors
- Bucket Elevators
- Steep Incline Conveyors
- Reversing Shuttle Conveyors
- Belt Trippers & Plows
- Belt Feeders

FEECO offers custom material handling equipment and systems for a wide variety of bulk solids handling applications. Our material handling systems are heavy duty, and built with longevity in mind.

A variety of support equipment can be integrated to provide a complete system, including reclaim units, weighing devices, crushing/sizing machinery, transfer/screening towers, etc.

# COMPLETE PROCESS SYSTEMS

One of the major advantages to working with FEECO is our complete system knowledge; we're not just experts in one part of the process, but rather, every component. This allows us to provide our customers with a unique perspective on how each part of a process will work together as a whole.



A Typical FEECO Disc Pelletizing Setup

## FERTILIZER GRANULATION SYSTEMS

We've been the leader in fertilizer production equipment since 1951. We can provide complete granulation systems, like that pictured above, or individual pieces of equipment for both inorganic and organic applications.

### INORGANIC SYSTEMS

- Ammonium Sulfate
- DAP, MAP
- NPK Grades
- Pipe Reactor Grades
- Potash (KCl)
- TSP, SSP
- Urea

### ORGANIC SYSTEMS

- Cattle Manure
- Dairy Manure
- Hog Manure
- Chicken Litter
- Chicken Manure
- Municipal Sewage Sludge

### ADDITIONAL SYSTEMS

- Animal Feeds
- Micronutrients
- Soil Conditioners
  - Gypsum
  - Limestone

# THE FEECO INNOVATION CENTER

The FEECO Innovation Center is a unique testing facility where we can test your material at both batch and pilot scale. Testing offers a host of invaluable information, allowing you to gain critical data on your material, work out process variables, fine-tune product characteristics, and develop a recipe for process scale-up. With over 65 years of experience, we've built a vast database on a variety of materials and test procedures. We can test your material in our US or Australia testing centers.

We offer comprehensive testing services in four categories:

**1. Feasibility/Proof of Concept** - An initial, non-witnessed batch testing phase in which the possibility of creating a product is explored.

**2. Proof of Product** - A more in-depth batch testing phase in which more time is spent determining whether a product can be made to desired specifications.

**3. Proof of Process** - A continuous testing phase that aims to establish the equipment setup and parameters required for continuous production of your specific material.

**4. Process/Product Optimization** - An in-depth study to optimize your specific material's characteristics and/or production parameters in an industrial setting.

## Types of Testing Conducted in the FEECO Innovation Center:

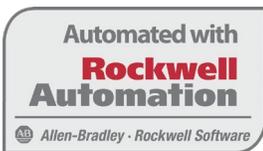
### AGGLOMERATION

- Pelletizing
- Micro-Pelletizing
- Coating
- Conditioning
- Compaction Granulation
- Briquetting

### THERMAL

- Drying
- Calcination
- Carbon Activation
- Catalyst Activation
- Heat Setting
- Metal Recovery
- Organic Combustion
- Reduction
- Sintering
- Thermal Desorption
- Upgrading of Ores

## AUTOMATION AT ITS BEST



FEECO is a Rockwell Automation partner, providing integrated process control solutions, both as a service in the Innovation Center, and as part of a system purchase. FEECO and Rockwell Automation process control solutions are provided with current technology, motor control centers, programmable logic controllers, and data collection systems with advanced technologies for reporting. The FEECO Innovation Center features a Rockwell Automation PLC/MCC system, which utilizes current technologies for optimizing testing operations.

### DATA IN REAL TIME

Our system allows you to monitor, trend, and adjust various data points in real time, all from a single interface or mobile device. This includes:

- Current (Amps)
- Feed Rate
- Flow Rates/Product Flow
- Fuel Usage
- Gas Sampling & Analysis
- Horsepower
- Speed
- System Pressure
- Temperature
- Torque

### UNPARALLELED REPORTING CAPABILITIES

A control system from Rockwell Automation provides state-of-the-art data collection and reporting capabilities. Our system allows you to select only the variables you want to report on, from the exact time frame you're looking for. This is especially beneficial in the Innovation Center, allowing returning customers to pick up exactly where they left off.

FEECO can integrate third party equipment into your control system, giving you complete process tracking and visualization.

Secure remote access to the system provides unparalleled troubleshooting capabilities.

Additional capability to customize data reporting features the ability to accommodate a broad range of operational variables.

# IN-HOUSE MANUFACTURING CAPABILITIES

Our state-of-the-art fabrication facility is equipped with the latest equipment and technologies, and is operated by experienced welders, machinists, pipe fitters, and fabricators, allowing us to produce high quality work at high capacities.

**Plant Area** 59,000+ square feet

**Material Handling** Seventeen (17) traveling overhead cranes

**Rolling** Bertsch Roll: FEECO offers a 1" thick x 10' wide plate rolling capacity, so heavy-duty cylinders, tanks, drum fabrications, cyclones, and other difficult sections are easily and accurately formed.

**Cutting** FEECO provides various types of cutting services, allowing for a tremendous amount of versatility:

- **Punching** MUBEA plate punch 1-1/4" round holes x 1" plate
- **Sawing** 3-Band Saw 18" maximum automatic feed
- **Cutting** One (1) 1/4" x 10' Shear  
MUBEA Hydraulic Iron Worker - 88 Ton Capacity
- **Burning** Messer Titan II Plasma Cutting Table - 10' x 40'
- **Machining** 5' Swing radial drill  
Lathes  
27" swing x 10' centers CNC; vertical mill 11" x 54"

**Bending** 500 Ton x 10' bed brake press  
320 Ton x 12' bed brake press

**Fabrication** Since 1951, the skilled hands and technical expertise of our employees have been servicing the specialized needs of our customers. We have built a reputation for quality, accuracy, and service.

**Welding** Carbon, Stainless, Aluminum, and Inconel  
Certified for specialty materials such as: mild steel, alloys, stainless, Inconel, and Hastelloy.  
Mig, submerged arc, and TIG  
ASME certified welders

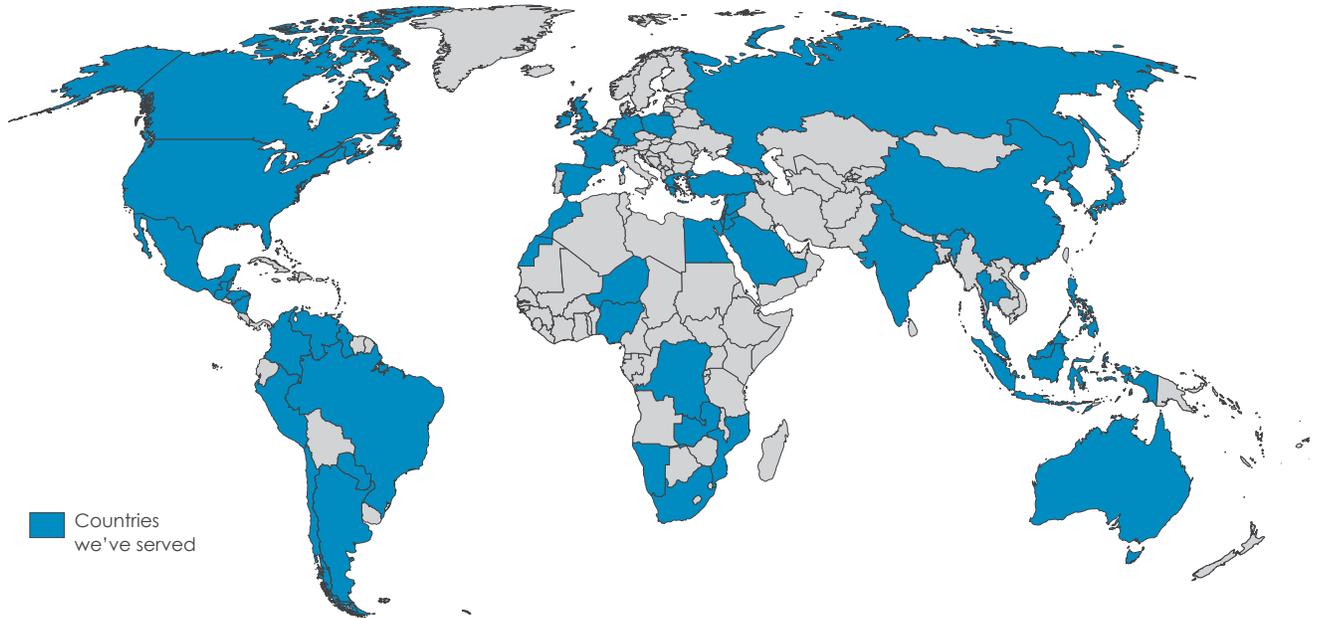
**Finishing** **Painting** Enamel, Epoxy, and Urethane coating systems are available

**Standards & Certifications** ASME Section IX Welding



# INTERNATIONAL EXPERIENCE

FEECO has been delivering custom process solutions and equipment manufacturing to companies internationally for over 65 years. As leaders in engineering, manufacturing and logistics, no job is too complex for FEECO. No distance too far.



# SERVICE

We are an extension of your maintenance department. From start-up and installation support, to emergency services and preventative maintenance, FEECO offers a variety of services to help keep your equipment running its best for years to come, whether your equipment is FEECO brand or otherwise. We offer the following services:

- Installation & Start-up Support
- Spare Parts
- Field Services
  - Tire & Trunnion Wheel Grinding
  - Drum Trunnion Training
  - Alignments
  - Gear Replacement
  - Spare Parts Installation
  - Laser Alignment
  - Inspections
  - Equipment Audits
- Training Programs
- Process Optimization Engineering
- 24-Hour Emergency Service



Copper Hydroxide micro pellets created in the FEECO Innovation Center

## THE FEECO COMMITMENT TO QUALITY

FEECO International, Inc. was founded in 1951 as an engineering and equipment manufacturer. FEECO is recognized globally as an expert in providing industry-leading process design, a range of engineering capabilities, including everything from process development and sample generation, feasibility studies, to detailed plant engineering, as well as manufacturing to a variety of industries, including: fertilizer and agriculture, mining and minerals, power/utility, paper, chemical processing, forest products and more. As the leading manufacturer of processing and handling equipment in North America, no company in the world can move or enhance a concept from process development to production like FEECO International, Inc.

The choice to work with FEECO means a well-rounded commitment to quality. From initial feasibility testing, to engineering, manufacturing, and aftermarket services, we bring our passion for quality into everything we do. FEECO International follows ISO 9001:2015 standards and procedures.

