



The FEECO Innovation Center offers a variety of options for those looking to test agglomeration processing methods. Whether you're looking to develop a product, solve a material problem, or optimize your existing product or process, the FEECO Innovation Center can help.

Capable of testing both non-pressure (tumble growth) and pressure agglomeration methods, the FEECO Innovation Center is well-equipped to suit small batch tests on a single piece of equipment, as well as a continuous process loop with multiple pieces of equipment. Testing in a continuous process loop allows you the opportunity to work out process variables, providing a recipe for success and process scale-up. Depending on your needs, we offer comprehensive testing options 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.

**Tests commonly conducted in the FEECO Innovation Center include:**

**Non-Pressure**

- Pelletizing (Drum or Disc)
- Conditioning
- Mixing
- Coating
- Micro-Pelletizing

**Pressure**

- Briquetting
- Compaction Granulation

**Available Test Equipment**

The FEECO Innovation Center offers a wide range of available test units and support equipment, as well as the necessary material handling component. This includes:

- Disc Pelletizers
- Pin Mixers
- Granulator
- Pug Mill
- Compactor/Briquetter
- Hammer Mill
- Screens
- Coating Drum
- Dryers
- Kilns
- Feeders

**Questions that can be answered through testing:**

- Will my material agglomerate?
- Can agglomeration solve my material problem?
- Which method of agglomeration will best suit my material?
- What equipment configuration will be required to produce the desired results?
- What binder, if any, will work best for my material?
- Can my product be improved?
- How can I optimize my existing process?

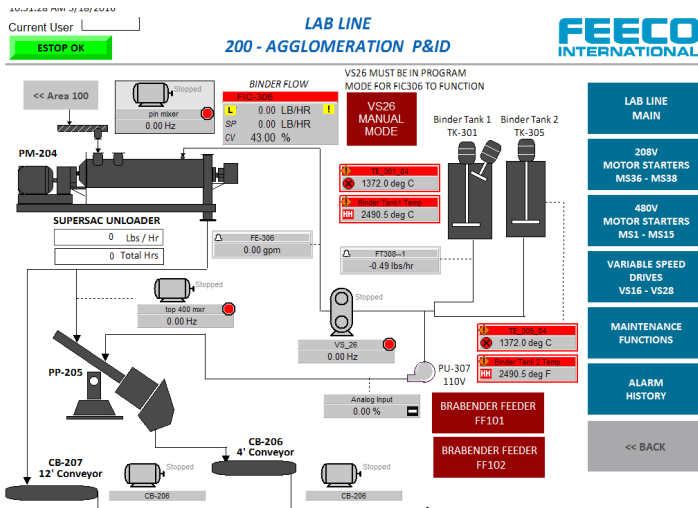


Figure 1: Data Screen

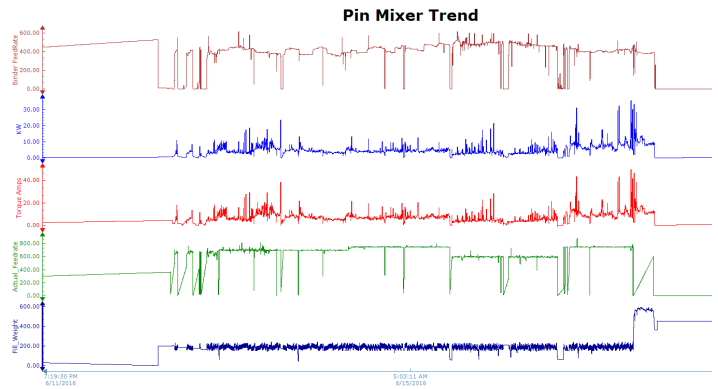


Figure 2: Pin Mixer Data Trend Screen

## 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 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 various data points, trending them, and even adjusting process variables in real-time, all from a single interface, or even from a remote device. This allows for a user to view process data and respond accordingly during production. FEECO can track and trend the following data points:

- Current (Amps)
- Feed & Product Rates
- Flow Rates
- 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 by a Rockwell Automation expert provides unparalleled troubleshooting capabilities.



## WASTE TRANSFORMATION

The FEECO Innovation Center also works extensively in helping customers to transform waste materials and process by-products into value-added products through agglomeration and other processing methods. The list below looks at some of the waste transformations FEECO has performed in recent years, as well as what processing methods were used to transform the material.

Beginning Material	Final End Product	Agglomeration	Drying	Blending	Thermal	Compaction
Sulphur Stack Emissions	Granulated Fertilizers	●	●			●
Calcium Sulfate	Fertilizer Pellets	●	●		●	
Ash (Wood, Fly)	Fertilizer Pellets	●	●			
Bentonite Clay	Cat Litter Granules	●	●			●
Calcium Chloride	Ice Melt Pellets	●	●			
Calcium Carbonate	Fertilizer Pellets	●	●			
Carbon Black Dust	De-dusted Pellets	●	●			
Cement Kiln Dust	Calcium Fertilizer Pellets	●	●			
Cell Phone Batteries	Lithium, Zinc Metal Recovery				●	
Clay	Cat Litter, Oil Dry Granules, Encapsulate Seeds	●	●	●		
Coal Dust	De-dusted Coal Pellets	●	●			●
Composts(Yard Waste)	Fertilizer Pellets	●	●	●		
Copper Dust	Metal Recovery Pellets	●	●	●		
Corn Cobs	Cat Litter, Oil Dry Pellets	●	●	●		
Clay	Proppants				●	
Dredge Sludges	Non-leaching Granules	●	●	●		
Electric Arc Furnace(EAF) Dusts	Metal Recovery	●	●	●		
Ethanol Plant Waste(DDG)	Animal Feed	●	●	●		
Foundry Dust	Metal Recovery	●	●	●		
Gold Ore Dust	Precious Metal Recovery	●	●	●		
Grain Dust	Non-explosive Pellets	●	●	●		
Gypsum Wallboard Waste	Fertilizer, Cat Litter Pellets	●	●	●		
Humate	Fertilizer Pellets	●	●	●		
Iron Oxide	Metal Recovery Pellets	●	●	●		
Lime(Waste Water Treatment Sludge)	Calcium Fertilizer Pellets	●	●	●		
Limestone	Calcium Fertilizer Pellets	●	●	●		
Talc Ore	Sterilized Baby Powder				●	
Manure – Cattle / Chicken / Hog	Fertilizer Pellets	●	●	●		
Soda Bottles	Recycled Plastic				●	
MAP Fertilizers	Fertilizer Pellets	●	●	●		
Municipal Wastes	Fertilizer, Fuel Pellets	●	●	●		
Nitrogen Fertilizers	Fertilizer Pellets	●	●	●		
NPK Blends	Fertilizer Pellets	●	●	●		●
Paper Sludge	Fertilizer, Cat Litter	●	●	●		
Petroleum Coke Dust	Fuel Pellets	●	●	●		●
Phosphates Powder	Fertilizer Pellets	●	●	●		
Potassium Chloride	Fertilizer Pellets	●	●	●		●
Saw Dust	Cat Litter, Fuel Pellets	●	●	●		●
Soy Flour	Animal Feed	●	●	●		
Steel Dusts and Sludges	Metal Recovery Pellets	●	●	●		●
Sugar	Sugar Pellets	●	●	●		
Sulphur Dust	Non-explosive Pellets	●	●	●		
Tar Sands Waste Sludge	Substitute Fuel Pellets	●	●	●		
Titanium Metal Shavings	Metal Recovery	●	●	●		
Iron Ore	Metal Recovery Pellets	●	●			
Glass Batch	Glass Blend	●	●	●		
Ceramic / Aluminum	Refractory	●	●			
Paper Sludge	Bright White Clay				●	
Gypsum	Fertilizer Pellets	●	●			
Zinc Oxide	Metal Recovery Pellets	●	●			●
Nickel Ore	Metal Recovery Pellets	●	●			
Kaolin Clay	Coating Paper	●	●			
Tungsten Oxide	Metal Recovery Pellets	●	●			●
Raw Coal	Purified Coal				●	
Bone Meal	Fertilizer	●	●			
Ammonium Sulfate	Fertilizer					●
Diatomaceous Earth	Filter Agent	●	●			
Titanium Dioxide	Pigment Pellets	●	●			●

**Agglomeration:** Drum, Disc Pelletizer, Pin Mixer

**Drying:** Rotary Drum Dryer, Fluid Bed Dryer

**Blending:** Ribbon Mixer, Pug Mill

**Thermal Process:** Rotary Kiln

**Roll Compaction:** Roll Compactor

## THE INNOVATION CENTER ADVANTAGE

Testing in the FEECO Innovation Center provides an invaluable opportunity to test in a controlled environment, allowing you to gain a familiarity with your material, while reducing the chance for unforeseen problems after process scale-up. Some of the many advantages to testing in the FEECO Innovation Center include:

### **Material Experience:**

FEECO has been a pioneer in material processing since the 1950s, and has extensive knowledge around hundreds of materials and processing methods.

Customers gain a valuable familiarity with their material and its unique characteristics through testing in the Innovation Center.

### **Complete Process Knowledge:**

FEECO is familiar with each aspect of a process, from agglomeration and kiln processing, to drying and cooling, allowing us to look at how the process will function as a whole, instead of each individual portion.

### **Process Scale-up:**

Once the process configuration has been defined, FEECO can aid in process scale-up, as well as manufacturing the equipment needed to get the job done.

### **Automation & Data Collection:**

FEECO is a Rockwell Automation partner, providing integrated process control solutions for our customers, both as a service in the Innovation Center, and as part of a system purchase. This provides customers with state-of-the-art data collection and reporting capabilities.

A variety of data points can be monitored, trended, and adjusted in real time, all from a single interface or mobile device.

Historical data is also available for returning customers, allowing you to pick up exactly where you left off.

### **Virtual Lab:**

FEECO offers a unique Virtual Lab: a secure portal customers can log into and view their material being tested in real time, without having to come to the FEECO facility.

### **Particle Characteristics:**

The following characteristics can be tested and adjusted during testing:

- Attrition
- Bulk Density
- Compression
- Crush Strength
- Flowability
- Green/Wet Strength
- Moisture Content
- Physical Characteristics
- Particle Size Analysis
- Solubility
- Temperature

*Interested in Testing  
in the Innovation Center?*  
**Contact us today at:  
[FEECO.com/contact](https://www.feeco.com/contact)**

