



## AVAILABLE TEST UNITS

- 3' (0.91m) Diameter x 20' (6.1m) long rotary dryer
- Flight/Lifter Simulator (for testing flight design and pattern)

The FEECO Innovation Center offers a variety of testing options to simulate the conditions in continuous, commercial size rotary dryers. Testing offers a host of invaluable information, allowing you to gain critical data on your material, work out process variables, and develop a recipe for process scale-up.

Our flexible setup, combined with the expertise of our process engineers and our experience with hundreds of materials allows a variety of thermal tests to be expertly conducted. We can run tests in the dryer alone, or test your material as part of a continuous process loop as part of a larger agglomeration or granulation process. Samples can be gathered throughout testing to assess particle characteristics.

In general, testing is typically carried out in two phases:

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

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

## OPTIONAL TESTING CONDITIONS & EQUIPMENT:

- Baghouse
- Data Collection & Trending System
- Direct or Indirect
- Parallel (Co-Current) Flow
- Removable Flights, Dams, and Bed Disturbers
- Thermal Oxidizer
- Water Quench Tower
- Wet Scrubber

## COMMONLY TARGETED PARTICLE CHARACTERISTICS:

- Attrition
- Baghouse Efficiency
- Bulk Density
- Compression
- Crush Strength
- Flowability
- Moisture Content
- Particle Size Distribution
- Solubility
- Temperatures

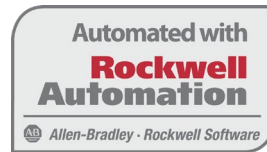
## REPORTING & DATA IN REAL TIME

Our state-of-the-art 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.

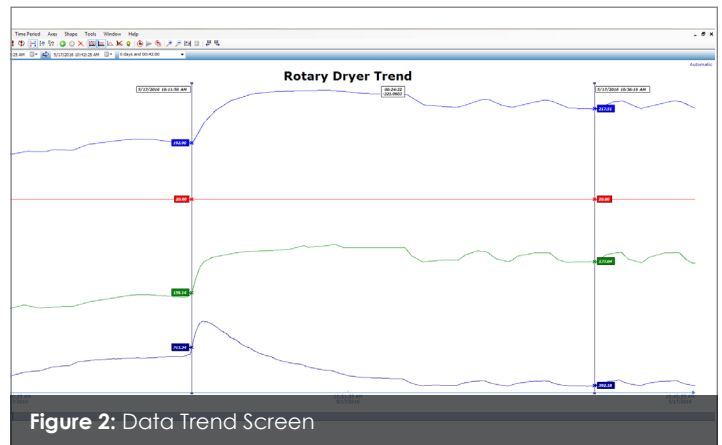
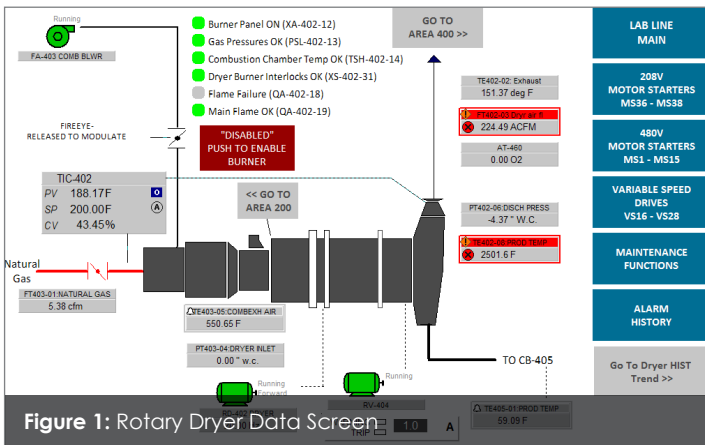
FEECO is a Rockwell Automation partner, providing integrated process control solutions, both as a service in the Innovation Center, and as part of a system purchase. FEECO and Rockwell Automation process control solutions are provided with current technology, motor control centers, programmable logic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

Data gathered includes:

- Current (Amps) <sup>RT</sup>
- Burner Fuel Usage
- Drum Slope
- Emissions
- Fan Speed <sup>RT</sup>
- Feed & Product Rates <sup>RT</sup>
- Horsepower <sup>RT</sup>
- Temperature (Feed end, Internal, Thermal Oxidizer, Product, & Exhaust Gas) <sup>RT</sup>
- Natural Gas Flow Rates <sup>RT</sup>
- Outlet Gas Parameters
- Quench Tower Water Flow <sup>RT</sup>
- Residence Time
- Rotational Speed
- Samples: Feed, Product
- Particle Size Analysis of Feed & Product
- Steam Flow <sup>RT</sup>
- System Pressures <sup>RT</sup>
- Gas Sampling & Analysis (Oxygen, Carbon Monoxide, Nitric Oxide, Nitrogen Dioxide, Sulfur Dioxide, and combustibles discharged from various thermal processes) <sup>RT</sup>



(RT) indicates that the data can be tracked in real-time.



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.

# MATERIAL TRANSFORMATIONS

Completed through testing in the Innovation Center

## BEGINNING MATERIAL

## FINAL END PRODUCT

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

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

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

**Blending:** Pug Mill

**Thermal Process:** Rotary Kiln

**Roll Compaction:** Roll Compactor

## SCHEDULE A TEST

To discuss your testing needs with one of our process engineers and schedule a test, contact us today at:

[FEECO.com/contact](http://FEECO.com/contact)