FEECO INTERNATIONAL

ROTARY DRYER TESTING

AVAILABLE **TEST UNITS**

- 3' Diameter x 20' Length 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 experts 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:

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

Commonly Targeted Particle Characteristics:

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

3913 Algoma Rd. Green Bay, WI 54311, USA • Phone: (920)468.1000 • Fax: (920)469.5110 • **FEECO.com/contact**

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

Automated with Rockwell Automation
Allen-Bradley · Rockwell Software

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

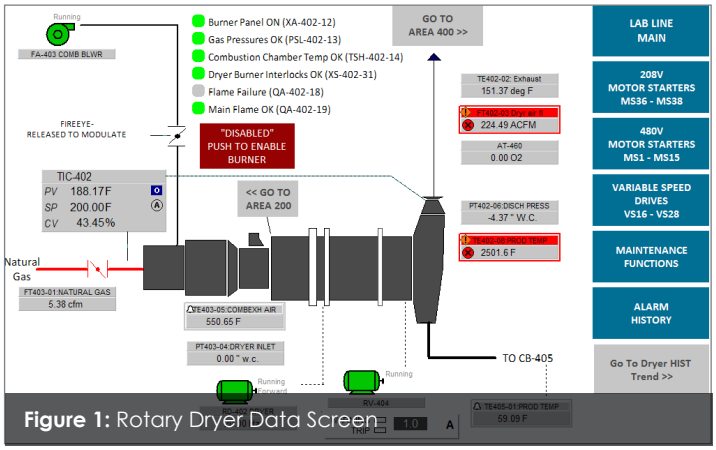

Figure 1: Rotary Dryer Data Screen

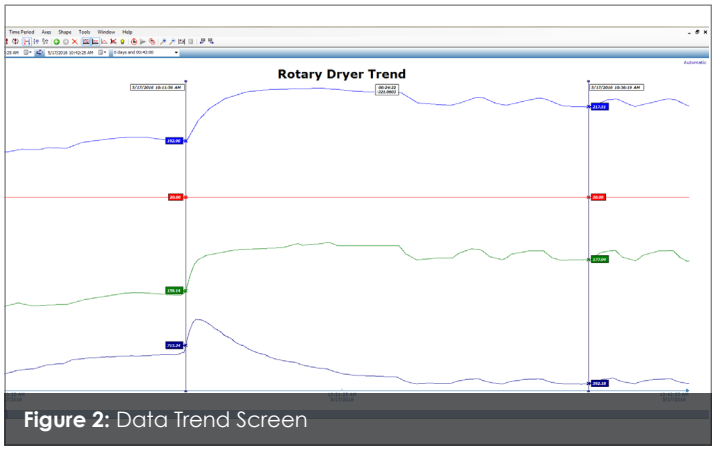

Figure 2: Data Trend Screen

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.

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

MATERIAL **TRANSFORMATIONS**

The FEECO Innovation Center also works extensively in helping customers to transform materials and process by-products into value-added products through agglomeration and other processing methods. The list below looks at some of the 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, Pan Pelletizer, Pin Mixer

Drying: Rotary Drum Dryer, Fluid Bed Dryer

Blending: Ribbon Mixer, Pug Mill

Thermal Process: Rotary Kiln

Roll Compaction: Roll Compactor