



## 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

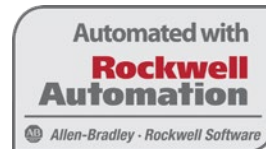
## COMMONLY TARGETED PARTICLE CHARACTERISTICS:

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

## REPORTING & DATA IN REAL TIME

A variety of data points can be gathered during testing, many of which can be viewed, trended, and even adjusted in real time from a single user interface for optimal process transparency. Data collected during dryer testing may include:

- Current (Amps)<sup>RT</sup>
- Burner Fuel Usage
- Drum Slope
- Fan Speed <sup>RT</sup>
- Feed & Product Rates <sup>RT</sup>
- Temperature (Feed end, Internal, Thermal Oxidizer, Product, & Exhaust Gas) <sup>RT</sup>
- Residence Time
- Rotational Speed
- Particle Size Analysis of Feed & Product
- 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>



(<sup>RT</sup>) Indicates that the data can be tracked in real-time.  
(\* ) Gas sampling & analysis is available at an added cost

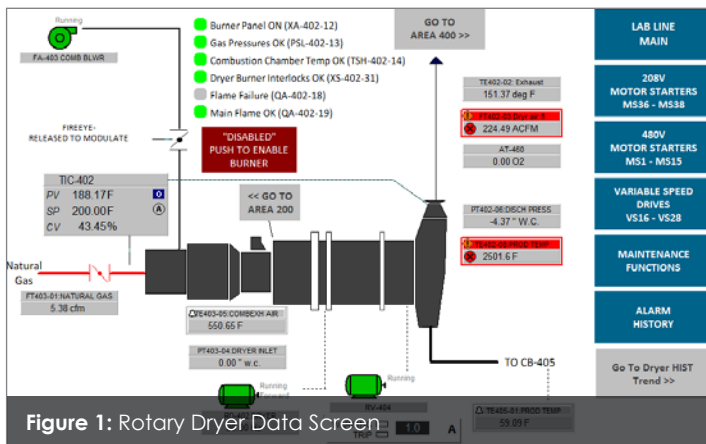


Figure 1: Rotary Dryer Data Screen

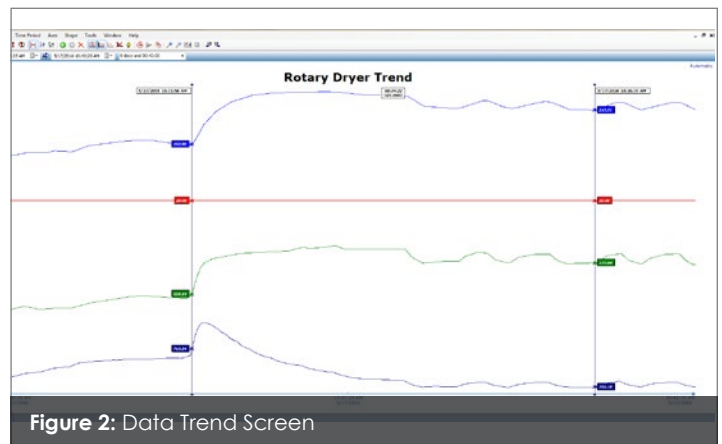


Figure 2: Data Trend Screen

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.



## 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**