

Aero-Instant



SPRAY DRYING SERVICES

3963 DARIEN HIGHWAY

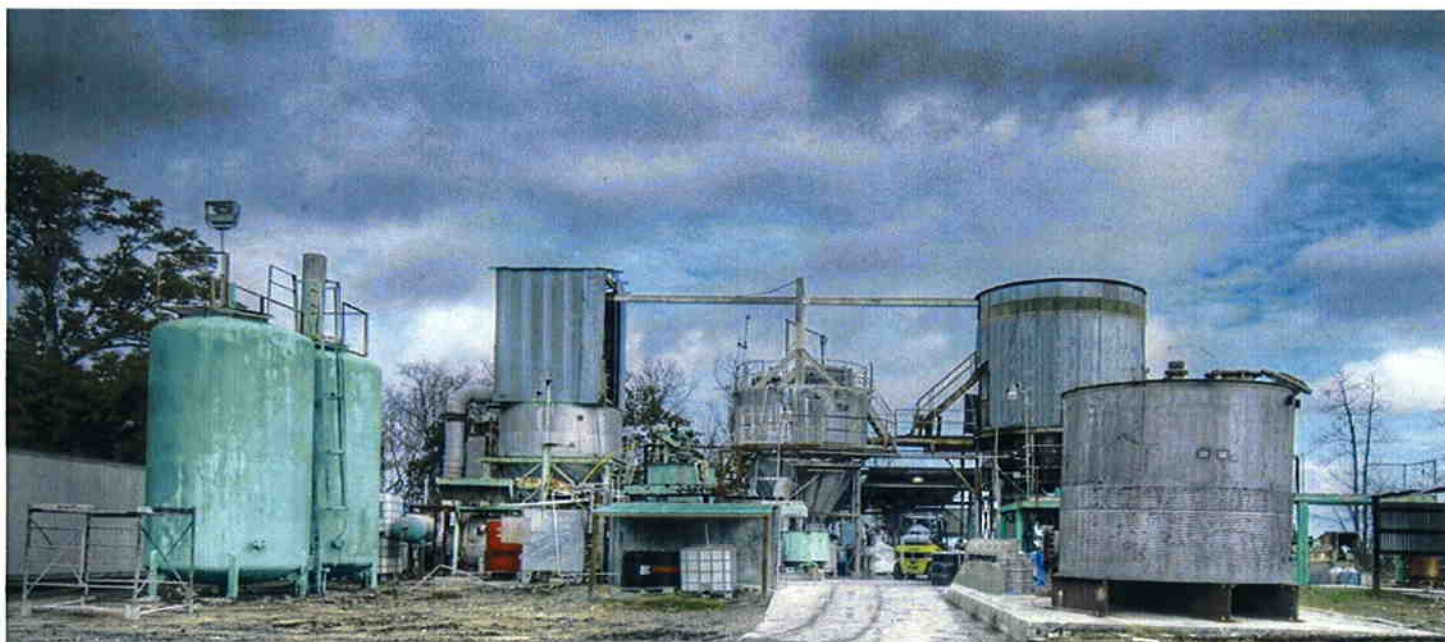
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Aero-Instant 12', 13', and 17' Spray Dryers (L-R)



VERSATILITY + EXPERIENCE = LEADERSHIP

Background

Aero-Instant Spray Drying Services maintains twelve NIRO spray dryers, ranging in size from 3' diameter to 18' diameter. These dryers are available for laboratory scale investigative work, pilot lot runs, and commercial production runs ranging to over 1,000,000 pounds.

Dr. Joe Iannicelli, formerly technical director of a major kaolin company and the founder of Aquafine, is a graduate chemist who has been involved with spray drying for over 40 years. For over 25 years, Aquafine, the parent company of Aero-Instant, represented NIRO in Georgia and collaborated on international projects. Georgia has the highest concentration of large spray dryers in the world, operating in the kaolin industry, and NIRO has supplied all of the dryers, except two, acquired by kaolin firms during the past 25 years.

Dr. Iannicelli's involvement with spray dryers includes the use of spray dryers to carry out chemical reactions, such as silane grafting on pigments, and use of spray dryers in difficult scrubbing applications, such as mercaptan removal from gases.

Technical Backup

Because of the long involvement with R & D, spray drying technology and the kaolin industry, Aero-Instant enjoys the advantage of in-depth technical contacts with leading firms and laboratories in the mineral, chemical and biochemical fields as well as research groups in universities.

Spray Dryer Types and Capacities

Aero-Instant operates over a dozen NIRO spray dryers, including the following units:

1. Three 3' diameter NIRO Mobile Minor spray dryers having a maximum evaporative capacity of 20 lbs. water/hr. One dryer can also operate in a closed cycle on solvents under nitrogen.
2. Three 4' diameter NIRO Utility spray dryers having a maximum evaporative capacity of 70 lbs. water/hr. One dryer is equipped for solvent evaporation in a closed cycle under nitrogen (see photo on next page).
3. 7.5' diameter NIRO S12 Pilot Plant spray dryer equipped with central air disperser and having a maximum evaporation rate of 350 lbs. /hr.
4. 8' diameter 8' straight side NIRO S12.5 Pilot Plant spray dryer equipped with rotary and nozzle atomization.
5. 12' diameter NIRO small production dryer equipped with roof air disperser. This dryer can be operated for indirect firing and for post combustion of exhaust air. The maximum evaporation rate is 2000 lbs. /hr.
6. 13' diameter NIRO small production dryer equipped with central air disperser, having a maximum evaporation rate of 2000 lbs. /hr.
7. 17' diameter NIRO medium production dryer equipped with central air disperser, having a maximum evaporation rate of 3000 lbs. /hr.
8. 18' diameter NIRO Bowen production dryer having a maximum evaporation rate of 9000 lbs. /hr.

All of the above dryers are equipped with rotary atomizers, and all units except the 3' laboratory dryer are equipped with baghouse dust collectors.

Closed Cycle Dryer for Solvents under Nitrogen



Products Suitable for Drying

Aero-Instant Spray has spray dried the following classes of products:

1. Catalysts
2. Inorganic chemicals
3. Minerals, including kaolin, calcium carbonate, silicates,
4. Natural insecticides
5. Carbohydrates and cellulose derivatives
6. Food products and plant extracts
7. Food processing by-products
8. Detergents and surface active agents
9. Fertilizers
10. Organic chemicals
11. Dyestuffs, pigments
12. Plastic products, latex, resins
13. By-products and miscellaneous

Aero-Instant operates under strict environmental rules regarding air and water emissions. Only products having a TLV (Threshold Limit Value) of 5 or more (mg per cubic meter) are processed. No hazardous or toxic materials are ever dried on Aero-Instant equipment.

Development Program

Because of the full range of spray drying facilities, Aero-Instant is capable of determining drying feasibility in the laboratory, follow this up with pilot plant drying, and finally make extended productions runs of multiple truckloads.

The strategic plan of Aero-Instant is to acquire other dryers and process equipment as requirements develop.

Support Facilities and Auxiliary Equipment

Aero-Instant maintains a large complement of support equipment, including but not limited to the following:

1. Storage and mixing tanks ranging in size from 25 gallons to 7500 gallons. Tanks include stainless steel vessels of 200 gallons, 1200 gallons, 1400 gallons and 7500 gallons. Rubber-lined tanks include two units of 3000 gallons and two units of 5000 gallons.
2. Mixing equipment: Over 20 mixing units, including Cowles dissolvers up to 40 HP are available.
3. Over 20 pumps are maintained in inventory, including Moyno pumps diaphragm pumps, peristaltic pumps, and centrifugal pumps.
4. Vibrating and rotating screens include 18" and 48" Sweco and two 8' rectangular screens.
5. Pulverizer, 150 HP Elliott Mill with air classifier
6. Hammer Mills – several
7. Calciner 316SS 18" x 15' – Indirect fired, rated to 1000°F
8. Calciner – Inconel 12" x 7' – Indirect fired, rated to 2000°F
9. Calciner – 18" – single hearth – indirect fired, rated to 2000°F
10. Muffle furnace 5" x 2' – Inconel rated to 2000°F
11. Filter press 20 plates x 20" x 20"
12. High shear mill (homogenizer) (50HP)
13. Decanter centrifuges (two) Sharples P-1000
14. Fine media mills – Hi Com; IMPEX; Union Process
15. Magnetic separator 2.5" – 9 Tesla
16. Magnetic separator – 30" – 2 Tesla – rated at 2TPH
17. Magnetic separators (three) – 5" – 2 Tesla – rated at 1TPD
18. Hydrothermal reactor rated for 200 psi/400°F
19. Pelletizers (two)
20. Warehouses – three 4000 ft warehouses available for storing feedstocks, reagents, and spray dried products
21. Cold Storage container
22. Bagging equipment

The above facilities are supplemented with a complete one ton per hour mineral processing plant.

Pilot plant facilities are in turn backed up by a laboratory that includes smaller versions of all the above equipment, as well as equipment for measuring wet particle size, pigment reflectance, and abrasion index.

For further information,
please contact:

Joe Iannicelli

President

or

Joe Pechin

Vice President

Aero-Instant Spray Drying Services

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Please furnish information concerning your requirements including:

- a) type of product
- b) % solids
- c) estimated inlet and outlet temperature for drying
- d) quantity and schedule
- e) MSDS and safety information, if available

DIRECTIONS

Brunswick is situated on the East Coast about 60 miles south of Savannah, Georgia and about 60 miles north of Jacksonville, Florida.

Driving Directions to Aero-Instant office:

From Savannah, take I-95 south 60 miles to Exit 38.

From Jacksonville, take I-95 north 60 miles to Exit 38.

From Exit 38, take North Golden Isles Parkway (Spur 25) east 3.6 miles to Cypress Mill road (six stop lights). Turn left go 0.5 mile east to stop light at Route 17 (Darien Highway). Turn left, take Rt. 17 north 1.6 miles to Culligan Road. Turn left, go 100 feet to Aquafine/Aero-Instant gate, turn right.

Direct flights from Atlanta to Brunswick are available on Delta regional jets. Brunswick Airport is 3 miles north of Aero Instant office via Rt. 17.

Location

Aero-Instant Spray Drying Services is headquartered at 3963 Darien Highway, Brunswick, Georgia 31525, where a complete laboratory is maintained.

The pilot and production size dryers are located seven miles north of headquarters on historic New Hope Plantation, which comprises a tract of 1100 acres and is located at mile 23 on Route 17. Address is Aero-Instant Spray Drying Services, 5410 US Highway 17 North, Brunswick, GA 31525. Telephone 912-267-0040

Directions to Plant

From Savannah: Take I-95 south to Exit 42. Turn left on Rt. 99, go 1 mile to US 17, turn right, go 1 mile south to New Hope Plantation, turn left, go ¼ mile, then follow signs to plant entrance (¼ mile).

From Jacksonville:

Take I-95 north to Exit 42, turn right on Rt. 99, then follow directions above.

