SCOTT EQUIPMENT COMPANY

AST Drying System

U.S. Patent #5,570,517

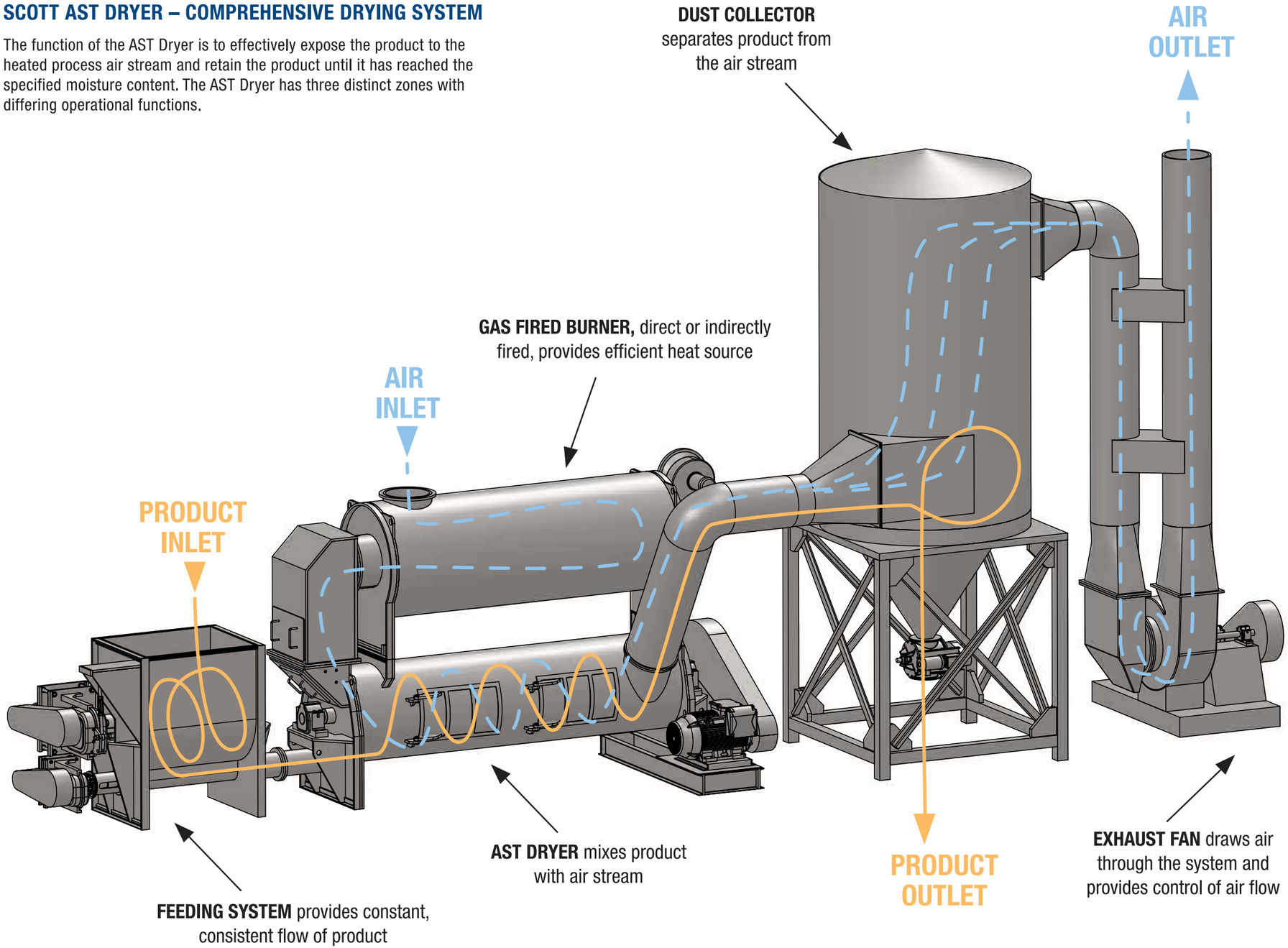
Scott's Air Swept Tubular (AST) Dryer is designed for rugged duty and versatility. The dryer's adjustable paddles and air dams permit optimum air to solids heat transfer. Materials ranging anywhere from filter cake, thixotropes, and dilatent slurries to powders and hard-to-handle granules can be effectively dried in the AST System. Even slurries with dry solids content as low as 5% can be dried efficiently to as high as 99% dry solids in a single pass.

- Patented agitator design incorporates intense mixing and grinding/deagglomerating action.
- BTU's consumed per dry ton are 10-20% less than most existing dryers.
- Capable of handling feed materials the consistency of liquid slurry, filter cake or granules/powders.
- Single pass drying with feed material as high as 95% moisture reduced to less than 1% moisture.
- Custom designed to meet required specifications.
- Ruggedly designed for years of trouble-free operation.
- Low capital cost.
- Can produce material ranging from pulverized powders with less than 1% moisture to granules with moisture content as high as 15%.
- The ability to adjust product retention time for hard to dry material.

605 4th Avenue Northwest • New Prague, Minnesota 56071 • (800) 394-2591 • www.scottequipment.com

SCOTT AST DRYER – COMPREHENSIVE DRYING SYSTEM

The function of the AST Dryer is to effectively expose the product to the heated process air stream and retain the product until it has reached the specified moisture content. The AST Dryer has three distinct zones with differing operational functions.



FEEDING SYSTEM

The purpose of the Feeding System is to accurately control the flow of product into the dryer. A constant and controlled feed to the dryer is important since a continuous system operates best at stable conditions. During steady-state operations, the feed rate held constant as other parameters are monitored and controlled.

The Feeding System will be the Scott Cake Feeder, Scott Mixer Feeder or a pump (positive displacement or centrifugal), depending on the viscosity of the product to be processed. The feeder is equipped with a variable frequency drive to allow for a ramp up of product flow rate during equipment startup.

GAS-FIRED BURNER

The function of the gas-fired burner is to be the source of heat energy into the AST Dryer. The burner heats the process air to an elevated temperature (400° 1200° F), and is responsible for controlling the energy balance of the system. The energy control is achieved by monitoring the process control thermocouple located at the discharge of the dryer. The drying system utilizes a PID loop (via the PLC) to maintain a set point by controlling the firing rate of the burner.

The burner is typically a direct fired gas burner complete with flame supervision system, fuel train, etc. Other fuel options include: propane vapor, fuel oil, or an indirectly heated system.

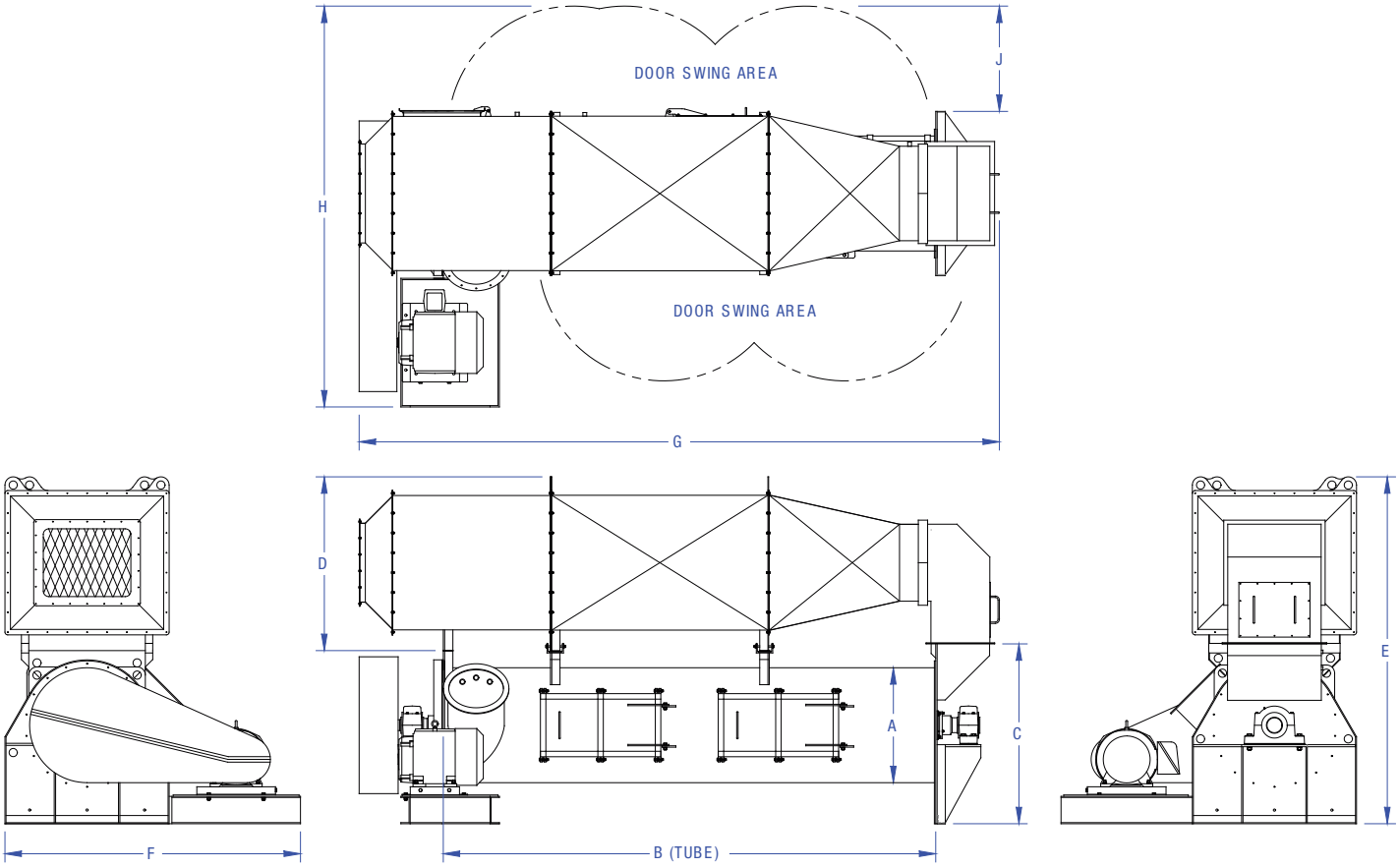
INLET ZONE (ZONE 1)

The Inlet Zone achieves size reduction (when applicable) and the majority of moisture evaporation. This is accomplished by a highly turbulent agitator area and efficient mixing area utilizing adjustable paddles.

The agitator plates (with a high concentration of fixed blades) work to reduce the product into small pieces and provide a highly turbulent zone for efficient heat transfer. The smaller particle allows for more efficient heat penetration into the material and also allows the moisture to more readily escape to the surface as a vapor. High velocity achieved in this zone, 11,000-12,000 ft/min, further aids in the efficient transfer of heat to the material. This combination, velocity and agitation, working in concert with a high temperature differential results in efficient and rapid evaporation. This zone of the dryer is sometimes considered the "flash zone" of the unit.

Further downstream in the first zone are a set of adjustable paddles that allow for back-mixing. Product that is still moist and potentially sticky will continue to be agitated and back-mixed via the adjustable paddles until it can be carried into the next zone by the airflow. The back-mix process is continuous with some product being carried over as new product is introduced.

At the division between Zone 1 and Zone 2 is a set of air dams. The purpose of these dams is to classify the product. Material that is dried enough to be free flowing and easily conveyed by the air stream can pass on to the next zone.



AST Dryer Specifications and Measurements - Inches (cm)

Model	BTU/hr (106)	ACFM	A	B	C	D	E	F	G	H	J
AST1610	1.0	1500	16 (41)	120 (305)	35 (89)	41 (104)	75 (190)	69 (175)	153 (389)	91 (231)	11 (28)
AST2010	1.0	2500	20 (51)	120 (305)	40 (102)	41 (104)	79 (201)	70 (178)	157 (400)	96 (244)	26 (67)
AST2412	2.0	4000	24 (61)	144 (366)	44 (112)	50 (127)	94 (239)	72 (183)	184 (467)	106 (269)	34 (86)
AST3012	2.5	6000	30 (76)	144 (366)	48 (122)	56 (142)	105 (267)	86 (218)	195 (495)	119 (302)	32 (81)
AST3612	4.0	8500	36 (91)	144 (366)	56 (142)	61 (155)	117 (297)	93 (236)	194 (493)	121 (307)	37 (94)
AST4215	4 - 8	12,500	42 (107)	180 (457)	65 (165)	63 (160)	127 (323)	108 (274)	234 (605)	146 (371)	38 (97)
AST4815	6 - 9	15,500	48 (122)	180 (457)	68 (173)	71 (180)	136 (345)	108 (274)	238 (605)	147 (373)	39 (99)
AST5418	8 - 14	20,000	54 (137)	216 (549)	96 (244)	100 (254)	193 (490)	125 (318)	288 (732)	180 (457)	55 (140)
AST6018	9 - 15	25,000	60 (152)	216 (549)	97 (246)	75 (191)	169 (429)	125 (318)	288 (732)	180 (457)	55 (140)
AST7220	12 - 18	35,000	72 (183)	240 (610)	100 (254)	100 (254)	205 (521)	148 (376)	340 (864)	200 (508)	52 (132)
AST8424	16 - 24	50,000	84 (213)	288 (731)	120 (305)	108 (274)	228 (579)	104 (264)	480 (1219)	213 (541)	58 (147)
AST9630	24 - 30	65,000	96 (244)	360 (914)	119 (302)	108 (274)	227 (577)	104 (264)	560 (1422)	234 (599)	55 (140)

SCOTT EQUIPMENT COMPANY

For more information, please contact us:
605 4th Avenue NW, New Prague MN 56071
Phone: (800) 394-2591 (952) 758-2591

Fax: (952) 758-4377
E-mail: Sales@ScottEquipment.com
Or visit our website at www.scottequipment.com