

APPLICATION BULLETIN

BACKGROUND/ CHALLENGE

A Tennessee-based manufacturer of high-quality silica products needed the optimum air classifier to process material within its new silica flour operation. They needed an air classifier versatile enough to produce a number of silica products that required a fineness range of 200 to 325 mesh with quick external adjustments.



Oversized particles in silica flour result in lower product efficiencies. Particle size distribution was the top priority, with rigid quality assurance that required a consistent product quality by limiting oversize particles in spite of variations in the particle size distribution of the ball-milled silica. The chosen air classifier had to withstand demanding performance requirements, and had to be versatile enough to produce a wide range of products. A fineness range of 200 to 325 mesh required a unit with quick external adjustments for maximum uptime.

STURTEVANT PERFORMANCE

The silica operation consulted with Sturtevant, a family-owned manufacturer with more than 130 years of service in the powder processing industry. Sturtevant recommended the high-efficiency Side Draft Air Classifier. The unit uses a multi-pin rejecter cage instead of whizzer blades. This configuration would ensure better control of large particle sizes and more efficient particle classification. As a quality control check, the operation set up a procedure to calculate the air classifier's efficiency with mass balance which accounts for specific particle sizes in the classifier feed from the ball mill, and the finished product and the coarse material that is returned to the ball mill. Tracking the location of particles before and after classification enables a quantifiable analysis of classifier performance.

EQUIPMENT RECOMMENDATIONS

SIDE DRAFT AIR CLASSIFIER

MODEL	HP	AIR FLOW VENT (CFM)	FEED RATE (TPH)	APPROX. WEIGHT		HEIGHT		DIAMETER		MIN. CLEARANCE	
				(LBS)	(KG)	(FT)	(MM)	(FT)	(MM)	(FT)	(MM)
20	5 - 7.5	3,000	4 - 12	2,100	953	7' 2"	2184	3' 5"	1041	2' 6"	762
30	7.5 - 10	9,400	10 - 40	2,800	1270	13' 3"	4039	5' 2"	1575	3' 4"	1016
40	20 - 30	15,300	20 - 65	3,500	1588	14' 0"	4267	6' 1"	1854	3' 4"	1016
50	30 - 40	23,500	30 - 100	7,000	3175	15' 6"	4572	8' 1"	2464	3' 4"	1016
60	40 - 50	35,300	45 - 150	14,000	6350	16' 0"	4877	9' 6"	2896	4' 3"	1295
70	50 - 60	38,000	60 - 190	14,600	6622	17' 0"	5182	13' 5"	4089	4' 3"	1295
80	60 - 75	56,000	75 - 240	15,000	6804	22' 1"	6731	13' 6"	4115	4' 3"	1295

Measurements are for general reference only. Please consult dimensional drawings for exact measurements.

SUMMARY

The Side Draft Air Classifier proved to be versatile enough to handle various products and the silica operation was extremely pleased with the consistent particle size distribution; their customer feedback indicated the high quality of the finished products. Shortly after successfully installing their first classifier, the client ordered three additional air classifiers.