

Applications of Fox Venturi Eductors

Case Study No. 6

Material: Ash, 40-50 # / ft³, 500-700 °F.

Problem: See customer's description below.

Solution: Installation of a Fox 3" stainless venturi eductor.

Please quote price and delivery for an eductor which we propose to add to an existing conveying system (see Figures 1 and 2) capable of conveying 2000 to 4000 lb/hr (average) from a sludge incinerator into an ash storage hopper. Ash flow is not continuous and we expect flow to be as high as 8000 lb/hr at times.

Downstream of the proposed eductor is a 4.0" ID United Conveyor Co. Nuvaloy conveying line consisting of 105 linear feet of piping with a 55 ft vertical lift, 3-90° impact elbows, 3-45° impact elbows and one tee with branch flow. Line pressure drop with the existing blower when ash is NOT being conveyed is 1.5 psi. Maximum conveying pressure is 13.5 psi.

The existing batch conveying system accumulates ash in one of the bottles for 4 to 10 minutes and then switches to the other bottle per the cycle indicated in Fig. 1. Valve E is modulated by a feedback from the conveying line pressure.

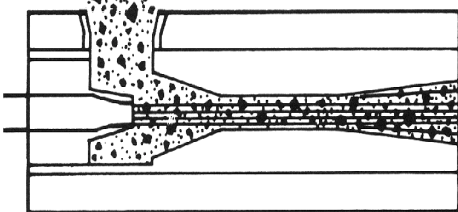
The rabble arm in the ash hearth of the sludge incinerator rotates at 1 to 2.5 RPM. Ash is swept into the discharge chutes twice per rabble arm rotation. The oscillating jaw crusher serves to break up ash clinkers by oscillating a circular toothed segment against an anvil set at 3/8" to 1" from the crushing jaw.

Ash Characteristics

Ash density is 40 to 50 lbs/ft³. It is dry and powdery. Its temperature in the incinerator is 500 to 700°F. The ash does not appear to be excessively abrasive. The jaw crushers and the conveying line elbows have not shown significant wear during four (4) years of continuous service. Our problem with the existing system is that the hot ash, residing in the bottles for 4 to 10 minutes, tends to burn and fuse together and form clinkers, which plug the outlet valves. We feel that conveying this ash as soon as it leaves the jaw crusher would resolve this clinker formation problem.

Eductor Requirements

The eductor should be able to handle small chunks of ash. We would like to be able to handle one-inch diameter chunks. If this size cannot be handled, please specify the maximum diameter size which can be handled.



SEE SYSTEM SCHEMATIC ON REVERSE SIDE.



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Technical Specifications:

Material: Ash, 40-50 #/ft³, 500-700° F.
 Capacity: 2000-4000 #/hr. average; 8000 #/hr. max.
 Conveying Distance: 105' of 4" ID pipe, 6 elbows

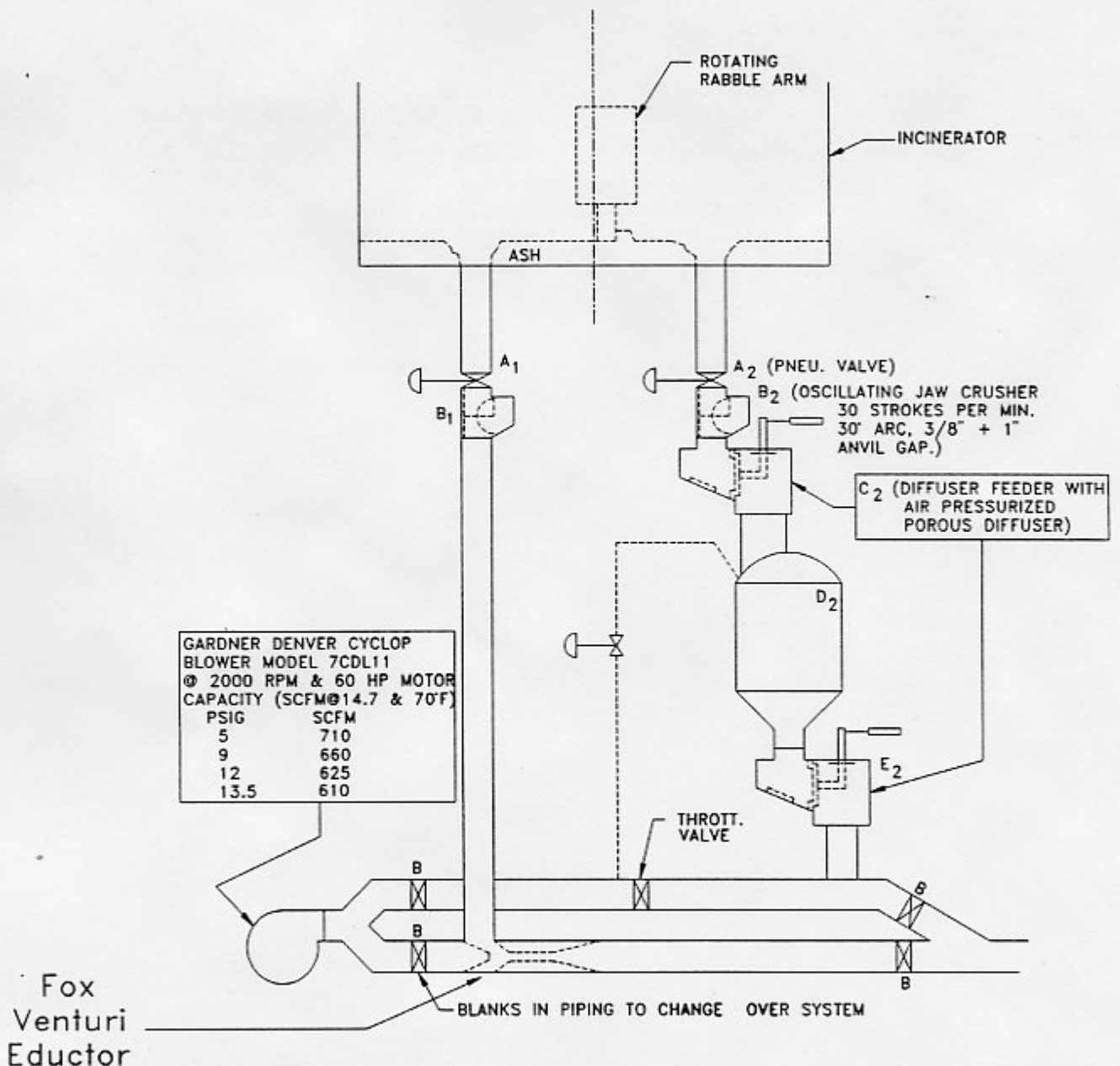


FIG. 2 PROPOSED PARRALEL ASH CONVEYING SYSTEM WITH EDUCTOR

Customer tested the Fox eductor in an ash line parallel to their existing system.

Three additional 3" and 4" eductors have been procured after outstanding eductor performance in this application. 6" eductors are now being considered for use in another facility.