



## **Continuous Dry Fly Ash Removal System Airlide® to Fuller-Kinyon™ Pump (A2P™)**

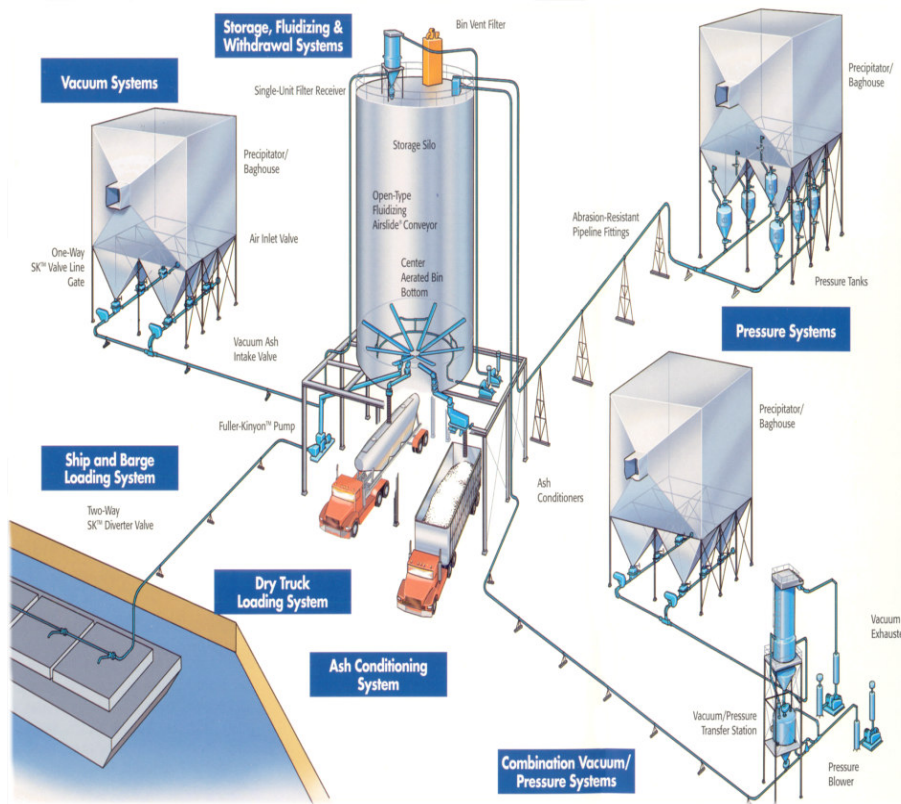




## Overview

- **Traditional pneumatic fly ash systems**
- **Continuous fly ash system (Airslide to F-K Pump)**
  - **Operation**
  - **Components**
  - **Picture tour of equipment at JEC (typical for A2P)**

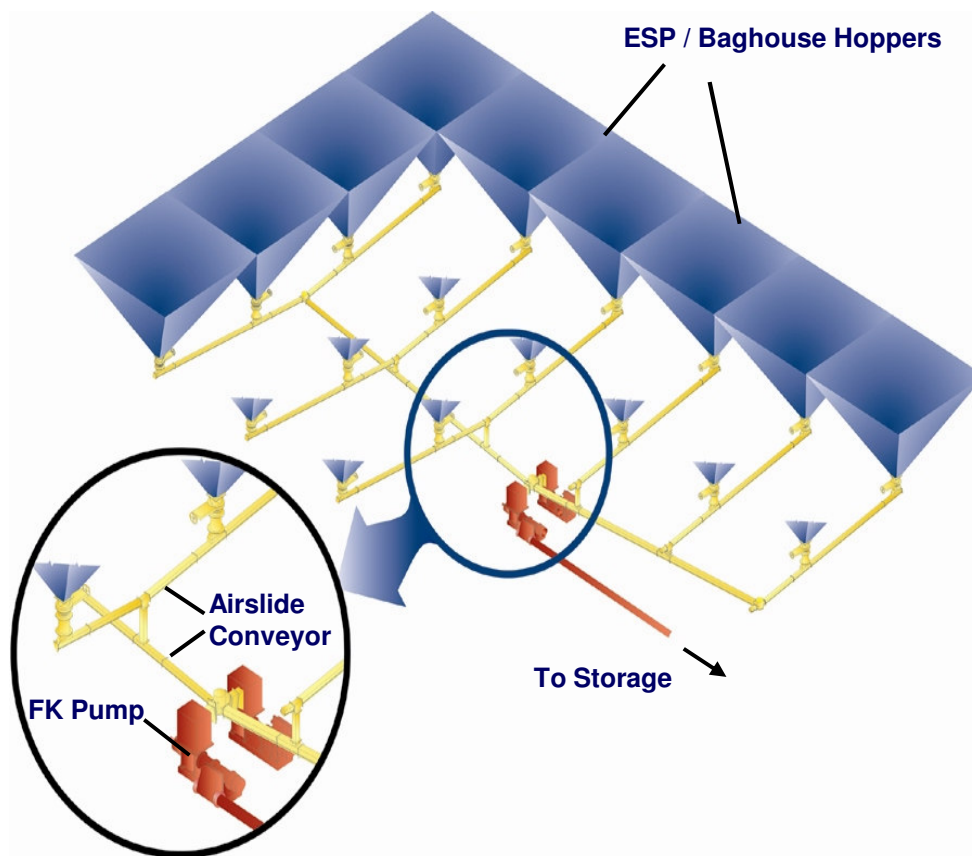
## Traditional fly ash systems



- Under ESP or Baghouse
- Ash residence time in collection hoppers
- Many cycling valves
- High amount of control I/O
- Moderate maintenance



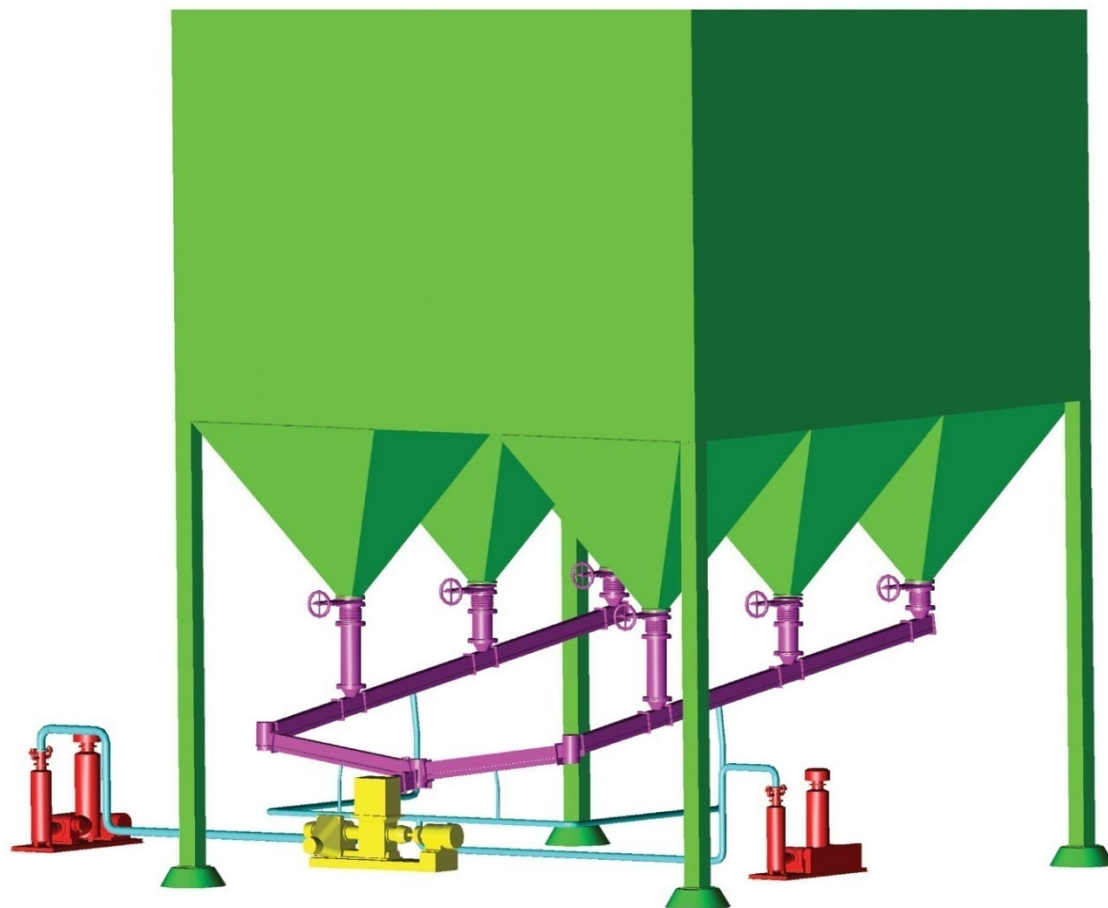
## Airslide to Fuller-Kinyon Pump (A2P)



- Only new in name and concept. Utilizes two well proven ash handling technologies
- Airslides and F-K Pumps
- Manual gate valves
- Airslide network transfers ash to F-K Pumps
- Rotary flow control valve
- Pneumatic conveying blowers
- Airslide fluidizing blowers



## Airslide to Fuller-Kinyon Pump (A2P)

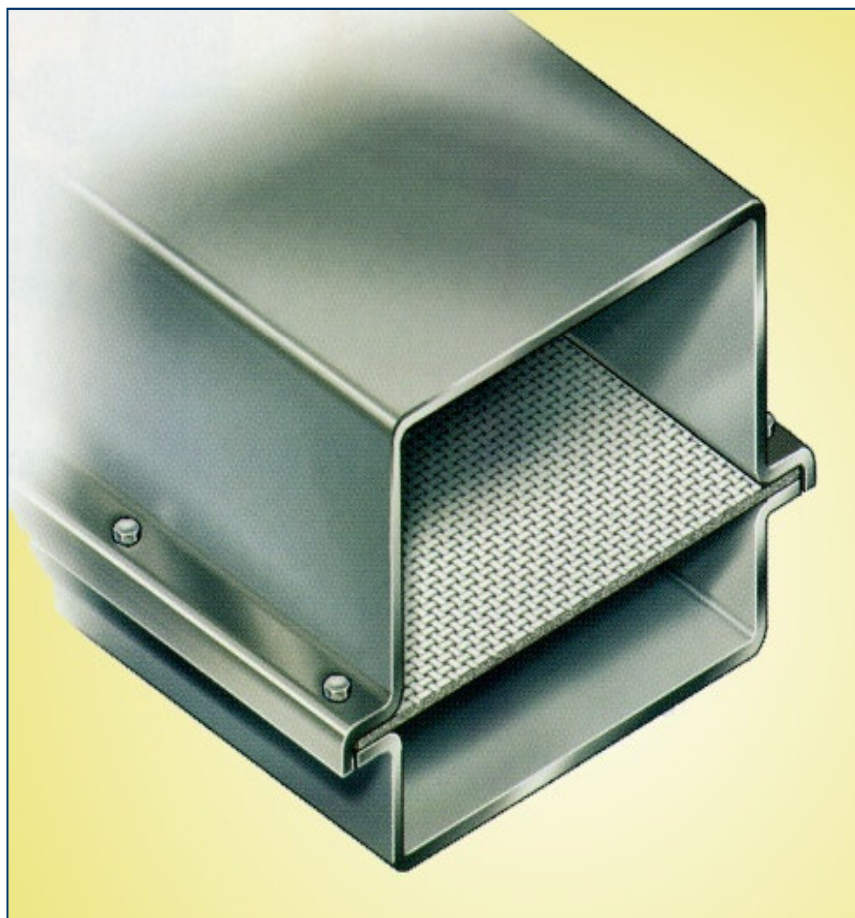


- All hoppers empty all the time
- No cycling ash intake valves at each hopper
- Only 2 moving parts between precipitator hopper and ash silo
- Less control I/O
- High capacity conveying rate over long distances
- Low operating costs





## Airslide Air Assisted Gravity Conveyors



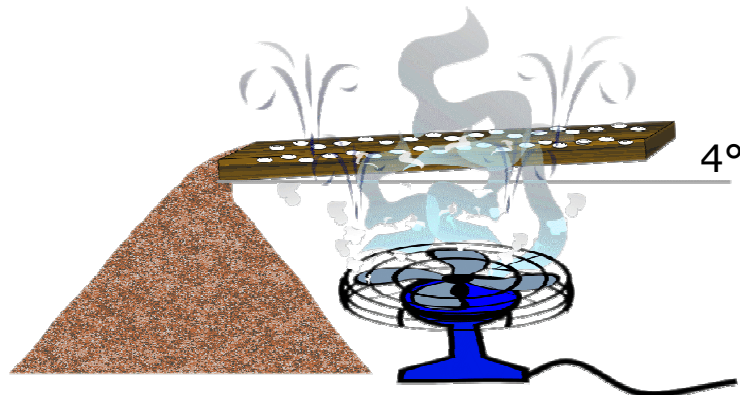
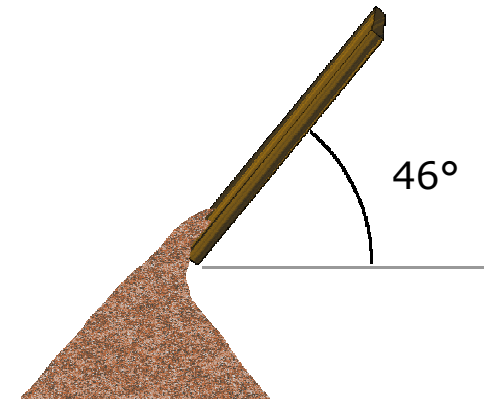
- Developed by Fuller Co. in 1945
- Upper and lower duct separated by a porous fabric membrane - .25" thick
- Fabricated from thick gauge steel
- Weather-lip seal
- Fabricated to several widths to accommodate low/high conveying rates



## Angle of repose and fluidization



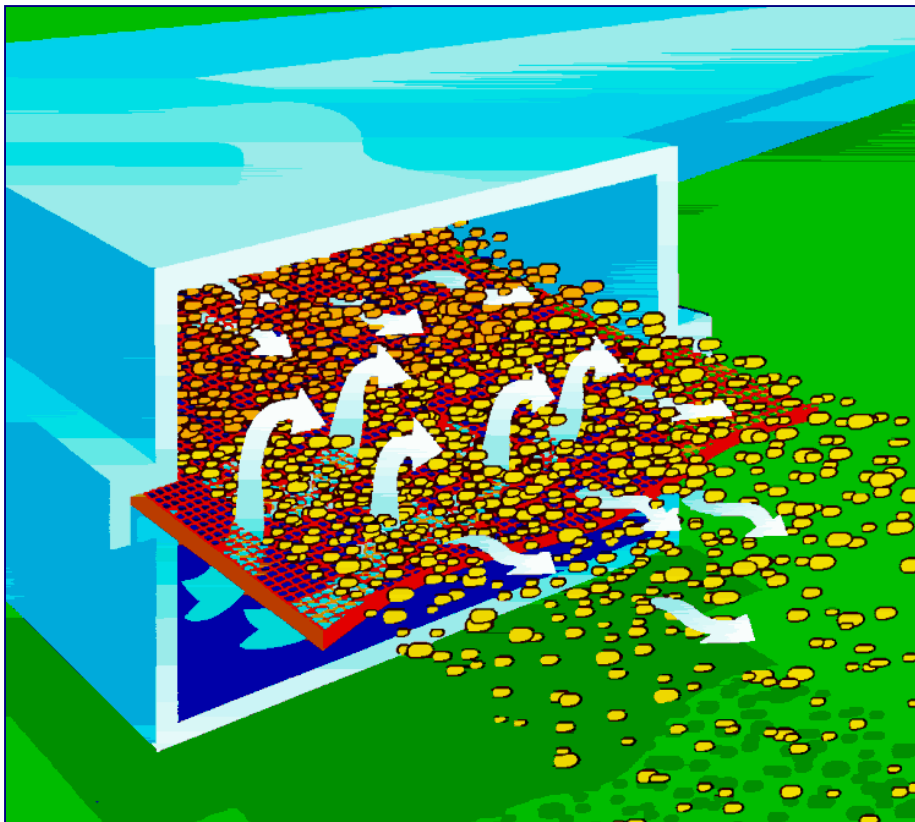
- All ash has a natural angle of repose



- Without any form of fluidization, the ash must be tipped on an angle greater than the angle of repose to establish gravity flow
- With fluidization, the angle of repose can be greatly reduced and gravity flow can be achieved



## Airslide Air Assisted Gravity Conveyors - Concept

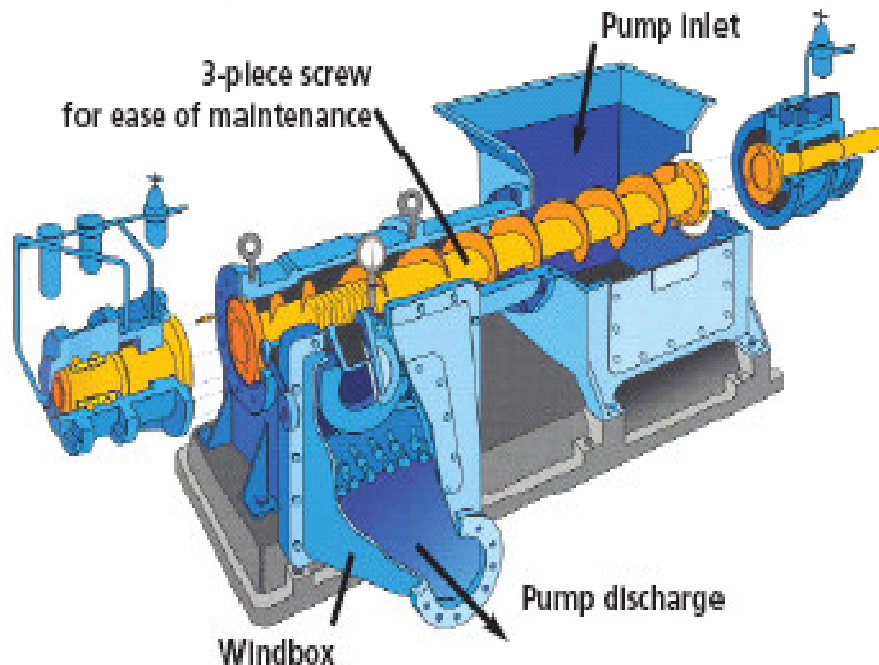


- Low pressure fluidizing air supplied to lower chamber - 0.5 to 3 PSIG
- Ash supplied to upper chamber atop membrane
- Air permeates through fabric membrane causing fluidization
- Ash will become motive when Airslide is pitched on a slight angle





## Fuller-Kinyon Pump Dry Bulk Line Charger



- Developed by Fuller Co. in 1926
- Rotating screw acts as volumetric line charger and airlock
- Screw advances ash into conveying chamber
- Flapper valve acts like check valve and provides back-pressure
- Easy to maintain



## **Airslides**





## Airslides



- Ash collected under hoppers is transferred into main trunk Airslide
- Transfers ash toward F-K Pump
- All Airslide insulated for personnel protection & heat retention





## Airslides



- Circulation air heaters heat ambient fluidizing air to Airslide. (1) per Baghouse/precip.
- Eliminates risk of condensing hot flue gas in Airslide



## Rotary flow control valve

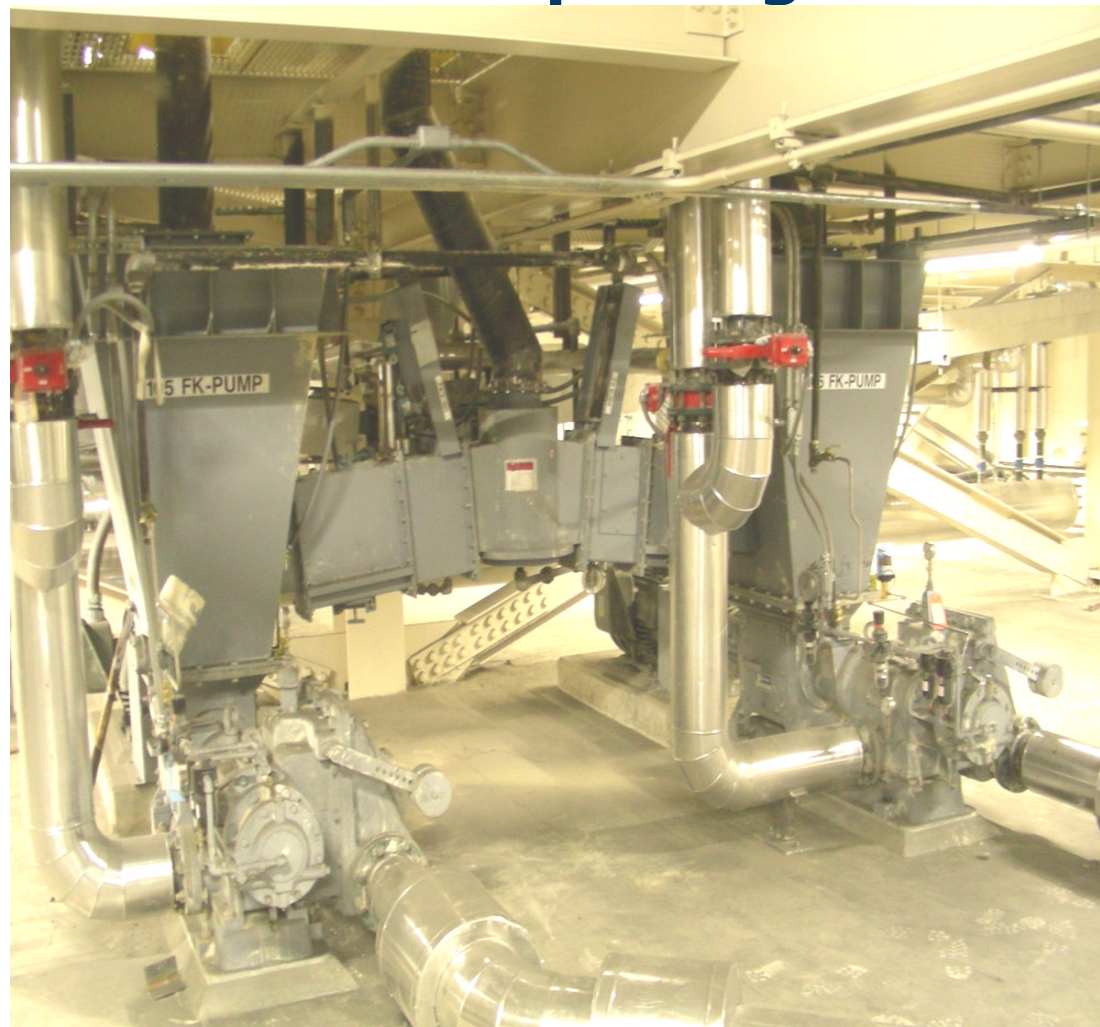


- Rotary flow control valve positioned in Airslide just upstream of F-K Pump
- Works in conjunction with convey line pressure transmitter
- Meters ash into pump at controlled rate during upset conditions
- During steady state ash production, valve is open 100% and does not modulate.





## **F-K Pump design**





# Thank You Questions?

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