

Enhanced Dilute Phase Conveying (EDIP)

- Minimize velocity in dilute phase conveying
- Reduce energy consumption
- Lower material degradation
- Equipment wear is reduced
- Two control hardware solutions

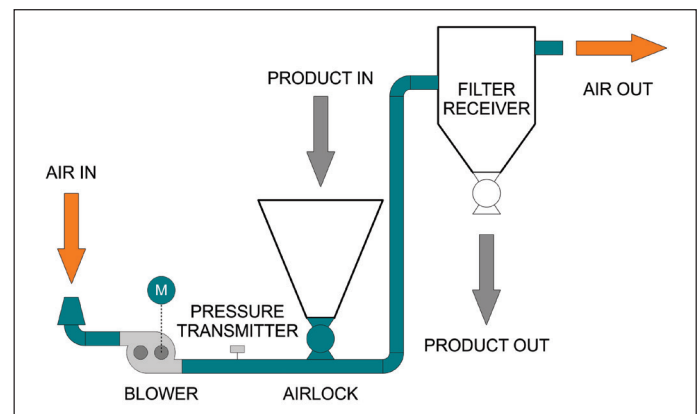


Description

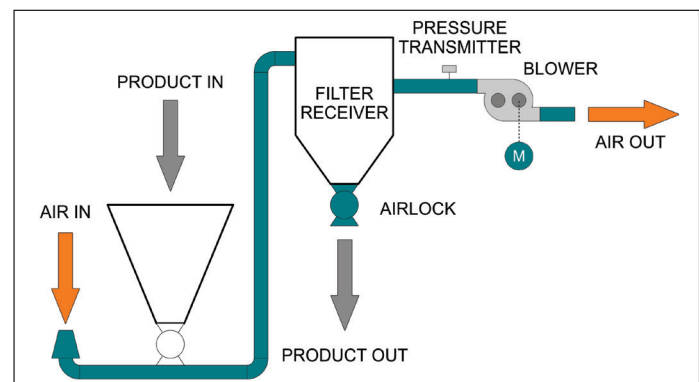
Dilute phase pneumatic conveying is the most widely used form of air handling in the dry materials marketplace. The typical arrangement uses a blower package (pressure or vacuum) that is operated at full speed using across the line power (50/60 Hz depending on the locale). A system designer must account for the worst case conditions in relation to rate, distance and material in order to select a blower model and speed for delivering the proper amount of air to the system. In this scenario, which comprises most systems, the blower ends up rotating faster than is required to perform the duty. In addition, the relationship between blower speed and actual convey line conditions are unique and unknown to the user.

Minimize the speed of the blower

A method was developed to “enhance” the operation of the dilute phase convey system in order to minimize the speed of the blower under all operating conditions. EDIP translates the performance of the equipment being used into a tangible conveying velocity set by the user. In addition, the system control responds to the hanging conditions in the convey line to maintain the desired velocity by changing the blower speed. The result is a dilute phase system that dramatically reduces power consumption, material degradation and system wear as compared to contemporary systems. Typical energy savings range from 20-40% versus operating the same system at full blower speed. To implement the blower speed algorithm solution, Coperion offers the EDIP Calculation Module and the EDIP Controller.



Pressure System



Vacuum System

EDIP Calculation Module

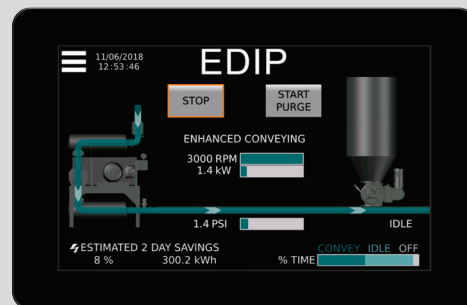
The EDIP Calculation Module is a small din rail mounted device that contains only the blower speed calculations necessary for optimum conveying efficiency. All other logic for the pneumatic conveying system is handled by the plant control system. With the ability to communicate over various industrial Ethernet network protocols, this module may be used with most existing PLC, DCS and PC-based control systems to optimize the blower speed of up to eight convey systems.



EDIP Controller

The EDIP Controller facilitates the operation of a dilute phase conveying system by combining the blower speed calculation with basic control functions and an operator interface.

With the color touch screen, on-board physical I/O and the ability to communicate over Ethernet/IP, the EDIP Controller may be used stand-alone or with an existing plant control system to optimize blower speed of a single convey system.



Equipment

Enhanced dilute phase conveying requires the following equipment for full function:

- Pressure or vacuum dilute phase conveying system using a positive displacement blower
- Pressure/vacuum transmitter
- Variable speed drive controlling blower motor
- Blower speed algorithm