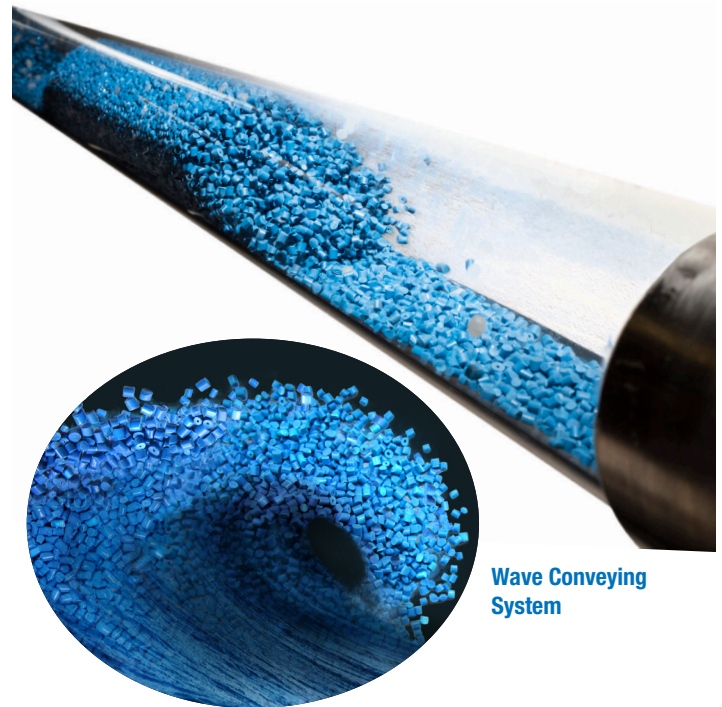


# Wave Conveying™ Speed-controlled Conveying Protects Resin Eliminates Angel Hair

Conair's patented Wave Conveying™ is distinctly different than conventional conveying. While the 5000 plus feet-per-minute speed of dilute phase conveying has been the preferred method of material conveying for decades, it was never ideal for some sensitive resins. Conair's new Wave Conveying System uses controlled-speed conveying (300 – 2800 feet-per-minute) to move these more sensitive materials that often cause problems like dust, angel hair, or wear to conveying systems when conveyed at high speeds.

Testing has shown that Wave Conveying can accommodate a variety of throughput needs. As a result of the speed control used, common conveying issues with sensitive materials are eliminated.



## Convey Smoother, Reduce Wear, Prevent Angel Hair

There are some undesired side-effects that come from conveying material from point A to point B as quickly as possible. Inherent with typical dilute phase conveying are problems like excessive dust, conveying system premature wear, streamers/angel hair, pellet fracturing, wearing of pellets that make proper melt difficult during processing. Until today, there were only ways to battle the symptoms of this problem – high-wear elbows, angel hair screens in conveying systems, per shift or per day filter changes, wasted material. Today that all changes.

Introducing Wave Conveying™, designed to vacuum convey pellets through existing tubing at existing rates. Not in a high-speed race of “pellet projectiles”, but in a gentle series of controlled, slow-moving resin waves.

Wave Conveying takes charge of material feeding into the conveying line and then controls the pump speed for adjustable conveying parameters. Pellets arrive at the processing machine undamaged, and without creating dust or angel hair. Elbows, valves, hose, and receivers all last longer with Wave Conveying delivery.

### ▶ **Controlled resin flow**

Fast moving, uncontrolled streams of pellets are replaced with highly-controlled, slow moving waves for greater pellet integrity.

### ▶ **Reduce dust, maintenance, angel hair, static and tubing wear**

Slow movement means less pellet degradation, less dust creation, and less filter maintenance. Angel hair streamers do not form. Tubing, elbows, and even hose last much longer. Static charges in the conveying lines are significantly reduced.

### ▶ **Patented and retro-fittable**

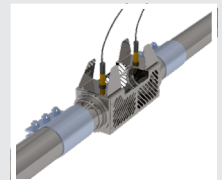
Patented by Conair, Wave Conveying™ can often be adapted to utilize existing tubing networks for low-cost implementation.

### ▶ **Fully tunable manual operation**

Each Wave Conveying receiver can be individually tuned for throughput or material type.

### ▶ **Accurately measured conveying speed**

Only the movement of air in a traditional dilute phase conveying system can be measured. But with Wave Conveying's slow speed conveying, the Wave Conveying speed sensor measures the actual speed of the material as it flows through the conveying line, for total control.



### ▶ **Use only the power you need**

Most conveying pumps are either on, running at 100% capacity, or off. The pump used in the Wave Conveying System is highly energy-efficient, thanks to the VFD (Variable Frequency Drive) which allows the pump to operate using only the amount of power necessary to achieve the desired material speed. In addition to energy savings, the pump life will be extended by only running at the capacity necessary.



## Components

### What is the Wave Conveying™ System?

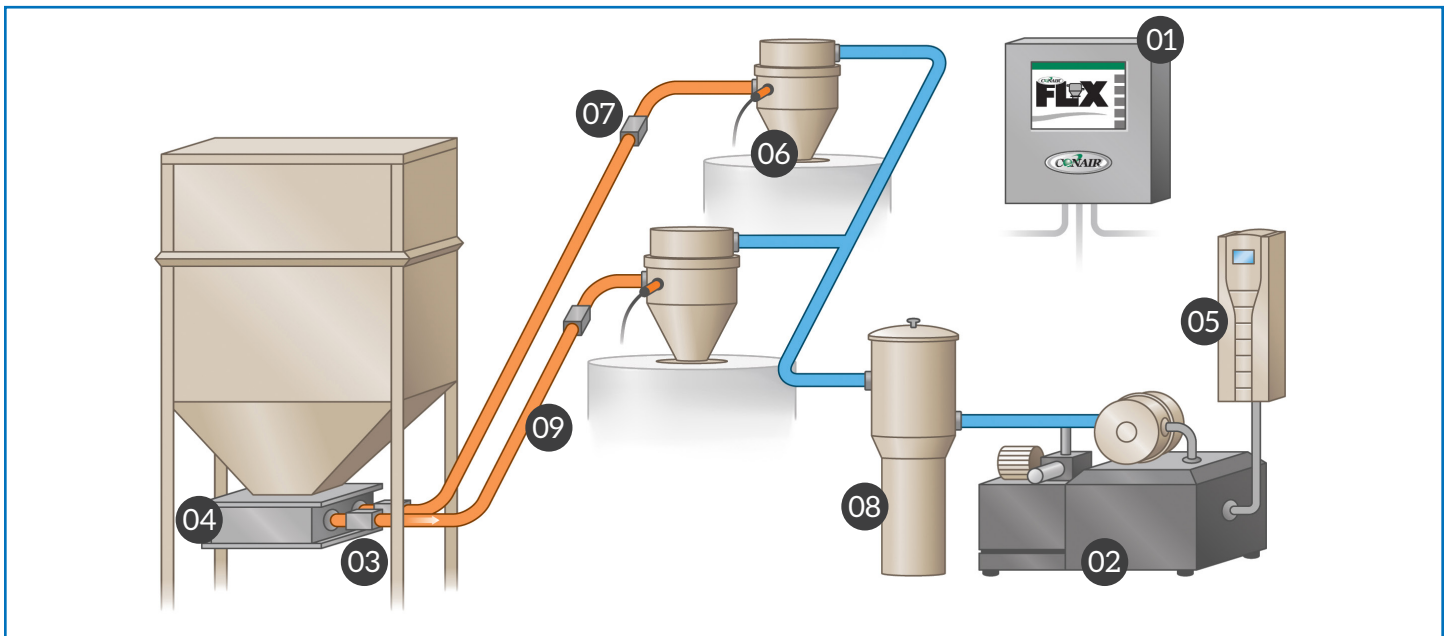
The Wave Conveying System solves problems associated with material conveying. The material speed varies based on application and material. It is moving waves of material fast enough that throughput is appropriate for the application desired, but slow enough that the individual pellets and the conveying equipment are undamaged.

### Can my existing system be converted?

Your existing conveying system can be easily adapted to create a Wave Conveying System. Many of your conveying components can remain in use, saving money and without requiring new installation.

### What if I'm building a new plant or installing a new system?

New Wave Conveying Systems are easily installed using conventional installation practices and components.



01

**FLX-128 Plus Conveying Control** – The FLX-128 Plus has advanced features that are necessary for the Wave Conveying System. Features such as recipes and VFD control are required. Depending on when it was purchased, your existing FLX-128 may work for your system with a simple software update.

02

**Long Distance Pump (LDP)** – This deep vacuum pump works with a VFD to allow for energy savings, and specific control of the amount of vacuum necessary for moving the pellets at the appropriate speed that makes resin protection possible.

03

**Wave Conveying Valve** – Specifically designed for the Wave Conveying System, this valve ensures that the correct vacuum and material speed are maintained for perfect conveying.

04

**Wave Conveying Distribution Box** – Not your standard distribution box, this box has been modified to work with the demands of the Wave Conveying System.

05

**Wave Conveying VFD (Variable Frequency Drive)** This drive allows the LDP Pump to operate at the perfect level, saving you money by saving energy, saving wear on the pump, and maximizing the efficiency of your conveying system.

06

**Receivers** – Standard DuraLoad material receivers are perfect for the Wave Conveying System.

07

**Wave Conveying Sensors** – The Wave Conveying System uses patent-pending sensors to monitor the material speed, and ensure that the material waves are moving at the perfect speed.

08

**Dust Collector** – Conair's standard DC1 and DC2 Dust Collectors can be used with the Wave Conveying System.

09

**Tubing, Bends, Couplings** – Standard tubing, bends, and couplings are used as part of the Wave Conveying System.



## How it Works

This conveying technology, developed by Conair to solve common conveying problems, utilizes specially modified Conair equipment to make Wave Conveying's speed-controlled resin conveying possible. Conair's patented system is a very cost effective way to solve many conveying problems that have existed in the past. A carefully grouped set of products, working together thanks to the brains of Conair's SmartFLX and FLX-128 Plus, make resin protection conveying possible. The conveying method of choice for the future, available today from Conair.



### FLX-128 Plus and SmartFLX

Wave Conveying systems can be controlled by Conair's FLX-128 Plus or SmartFLX conveying controls. FLX-128 Plus or SmartFLX control the LDP or HRG pump(s), receivers, valves, and other components. Both controls allow your conveying system to operate in any of the Wave Conveying speeds – from conventional dilute phase, to Wave Stream™, to Wave Pulse™, using simple recipe selection. The SmartFLX control is required to take advantage of the new AutoWave™ option for Wave Conveying.

### Long Distance Pump (LDP)

This deep vacuum pump works with a VFD (Variable Frequency Drive) to allow for energy savings, and specific control of the amount of vacuum necessary for moving the pellets at the ideal speed that makes resin protection possible.

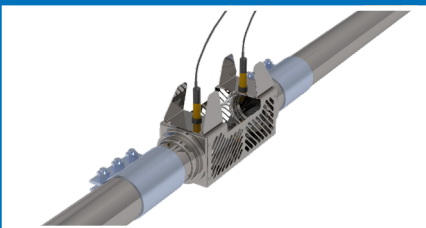


### DuraLoad Receiver

The DuraLoad receivers that are used as part of an Wave Conveying System communicate with the FLX-128 Plus and have a unique recipe for use with the system.

### Wave Conveying Distribution Box and Wave Conveying Valve

Total control of the material flow is managed by Conair's patented Wave Conveying valve, connected directly to a distribution box installed below a material supply. Its operation is automatic and controlled by the FLX-128 Plus conveying system control.



### Wave Conveying Speed Sensor

With Wave Conveying's flow pattern, this speed sensor verifies that material moves slowly, smoothly, and reliably from source to destination. Only with Wave Conveying can the speed of moving material be measured in a vacuum conveying system.

Don't worry - it's all retrofitable. If you have an existing system with these components, you already have the majority of what you need to make an Wave Conveying System in your plant. A few updates to your FLX-128, pump, and distribution box, and you're well on your way to saving money and time by eliminating the problem of wasted degraded material, not having to constantly replace worn elbows, and not having the clogs and conveying problems that, before Wave Conveying, were just the cost of doing business with some "high maintenance" materials.

# Is the Conair Wave Conveying™ System Right for You?

The Wave Conveying System answers the needs of processors dealing with:

- **Brittle materials** – Materials that fracture during conveying, creating excess dust that requires frequent dust collector filter maintenance, and loss of material.
- **Soft materials** – Material that rubs the inside of conveying tubes, creating angel hair streamers that bridge and clog conveying and blending systems.
- **Abrasive materials** – Material that wears out material tubing, elbows, valves, and receivers.
- **Plugged material lines** – Some types of material are prone to getting stuck in vertical rises, particularly between loading cycles. This material creates “plugs” that can clog the material lines.
- **Uneven processing, due to pellet degradation** – Wave Conveying slows pellet travel, significantly reducing pellet wear and providing more uniform pellets to processing machines for a more even melt.

## Frequently Asked Questions

<b>What material and vacuum line sizes are used with Wave Conveying Systems?</b>	From 1.5 inch to 5.0 inch (OD) for both vacuum and material.
<b>How far can a Wave Conveying System move material?</b>	In most cases, the advantages of Wave Conveying slow speed conveying can be utilized for conveying resin up to 1000 feet.
<b>What conveying rate can Wave Conveying achieve with slow speed conveying?</b>	To date, Wave Conveying slow speed conveying has been accomplished with throughputs up to 15,000 lbs per hour.
<b>Can Wave Conveying match my current system rates (using standard dilute phase conveying)?</b>	Conair’s lab testing shows that the Wave Conveying System can achieve the same high throughputs. Conair’s lab is available for visits and for running conveying tests in the Wave Conveying System to prove its capabilities, prior to purchase.
<b>Can the Wave Conveying System operate multiple receivers?</b>	Yes. And a Wave Conveying System can operate in either Wave Conveying slow speed mode or conventional dilute phase conveying mode.
<b>Can an Wave Conveying System convey any type of material?</b>	Generally, yes - for 99% of plastic resins. Although it was designed to help eliminate problems associated with conveying of very soft and very abrasive materials, Wave Conveying has been found beneficial for the movement of a wide variety of materials.
<b>Does use of a Wave Conveying System save energy?</b>	Yes. The VFD (Variable Frequency Drive) of the LDP vacuum pump starts the pump slowly and operates the pump only at the exact speed setting required for conveying, which saves energy and extends the life of the pump.
<b>Can an existing conveying system be converted to Wave Conveying?</b>	Yes. A Conair Sales engineer can collect the details of a current system and assess the feasibility. In many instances, retrofitting requires minimal changes. Typically, changes only include updating the vacuum pump, the controls and adding Wave Conveying valve(s).
<b>Can an existing conveying system, with no Conair components, be converted to Wave Conveying?</b>	Yes. Typically, changes only include updating the vacuum pump, the controls and adding Wave Conveying valve(s). Non-Conair vacuum receivers, tubing, hoppers and dust collectors can all be operated within an Wave Conveying System. Wave can be tuned to accommodate most existing tubing sizes.

