

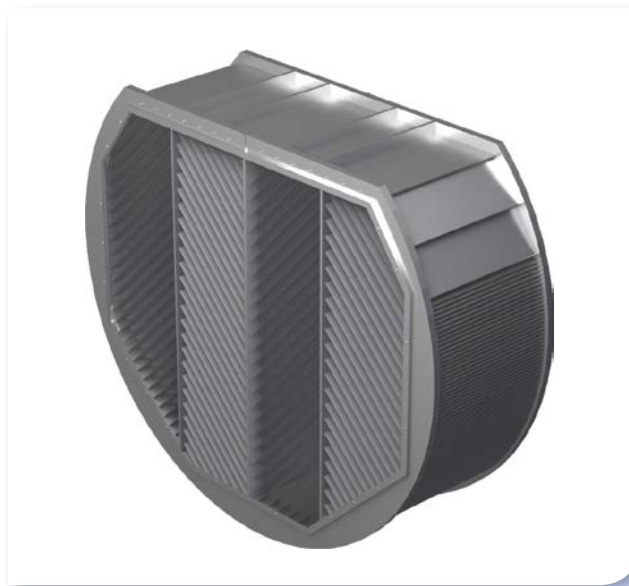
### Enhanced Cross-Flow™ Coalescer (ECF)

#### Features

- Good separation efficiency
- Robust construction
- Lowest pressure drop
- Tolerates medium to fine solids
- Fits all process equipment
- Easy to install

#### What is an Enhanced Cross-Flow Coalescer?

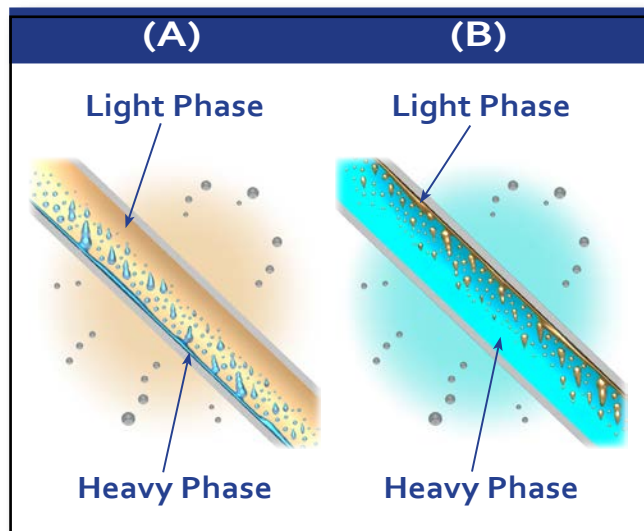
Enhanced Cross-Flow coalescer is an innovative plate separator specially designed for applications where an improvement in performance of conventional gravity settlers are needed and where other coalescer elements may be not be suitable due to either fouling problems from high concentration of solids or waxy compounds in the feed or when minimal pressure drop is required.



#### How do Enhanced Cross-Flow Coalescers work?

In a horizontal laminar flow application, a continuous phase enters the upstream face of the Enhanced Cross-Flow coalescer. Here the feed enters a highly compartmentalized area plate pack designed to minimize the distance a free dispersed droplet has to either rise or fall based on Stokes Law, before coming into contact with a surface and other dispersed droplets thus enhancing the coalescence process. As the larger droplets coalesce into much larger ones on a surface, they accumulate larger mass and leave the plate pack rapidly and counter currently against the continuous liquid flow. This design ensures that the dispersed droplets coalesce on the underside or topside of the parallel plates, depending on their density relative to continuous phase, facilitating the free removal process (see Figure 1). To increase higher removal rates, tighter plate gaps are designed to reduce droplet travel achieving higher removal separation.

Likewise, the solids would work their way downwards through the Enhanced Cross-Flow Coalescer plate pack section out the downstream face, settling to the bottom of the vessel. Changes in the plate angle from 45° to 60° promote an improvement in the tolerance of solids.



**Figure 1**

**(A)** In the continuous light phase, dispersed heavy phase droplets settle by gravity onto the bottom surface of the plates where they coalesce, forming a thin film which drains to interface region in vessel

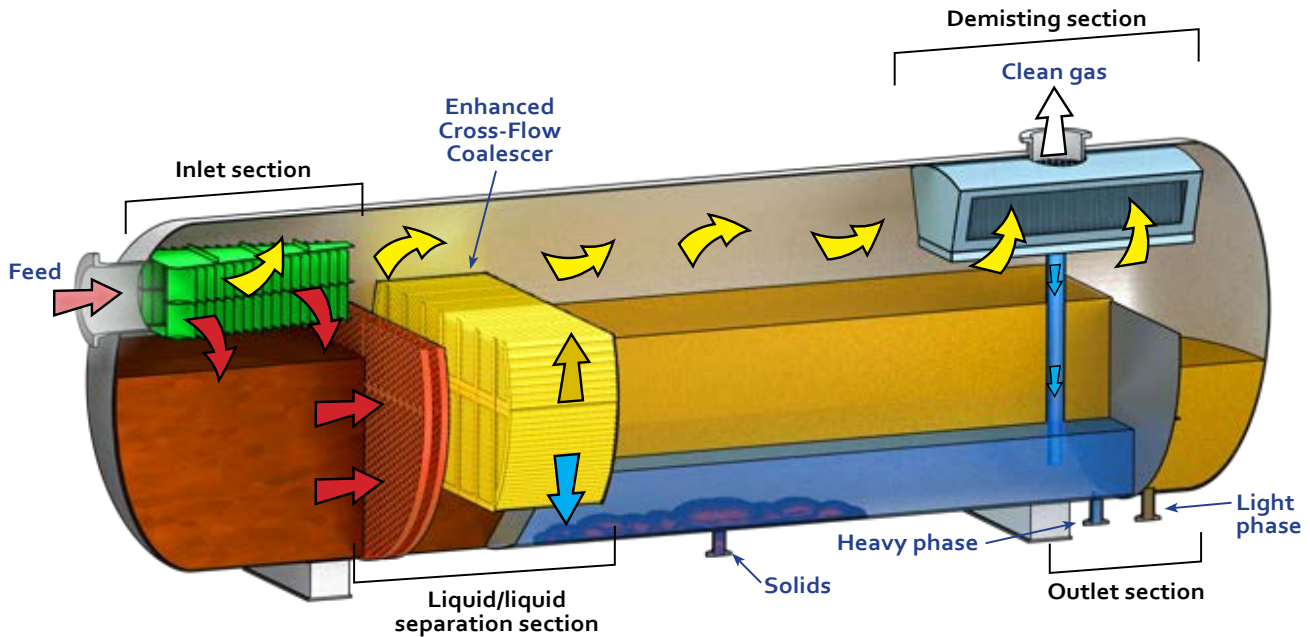
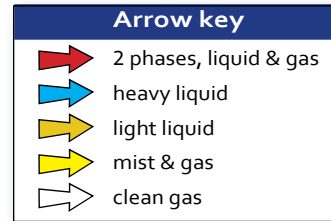
**(B)** In the continuous heavy phase, dispersed light phase droplets rise by buoyance forces onto the top surface of the plates where they coalesce, forming a thin film which rises above interface region in vessel

## Where are Enhanced Cross-Flow™ Coalescers used?

ECF Coalescers are predominantly used in two, three, and four phase separators (high or low pressure) and effluent gravity settle tanks. They also have been installed to promote gas/liquid separation for degassing application. They are found in:

- Oil and Gas exploration and production
- HPI Industries
- CPI industries
- Potable & Process water treatment
- Food and beverage
- Automotive, iron & steel
- Utilities

Specifications		
Style No.	Droplet size cutoff	Pressure drop
18 various configurations	≥ 50µ	<5 mbar
<p><b>NOTE:</b> Experienced EIT process engineers will custom design from the widest range of ECF Coalescer Plate packs to meet your efficiency, capacity, and turn down requirements.</p>		



**Figure 2**  
Successful operation of all coalescer elements depend primarily on vessel geometry such as, properly designed inlet, liquid/liquid separation and outlet sections. Various schemes are used with horizontal vessels depending on whether there is a significant amount of gas present as with Three-Phase Separators.

Experienced EIT process engineers can provide complete process modeling and design whether existing or new vessel to ensure expected efficiencies and flow rate along with trouble-free installation and startup.