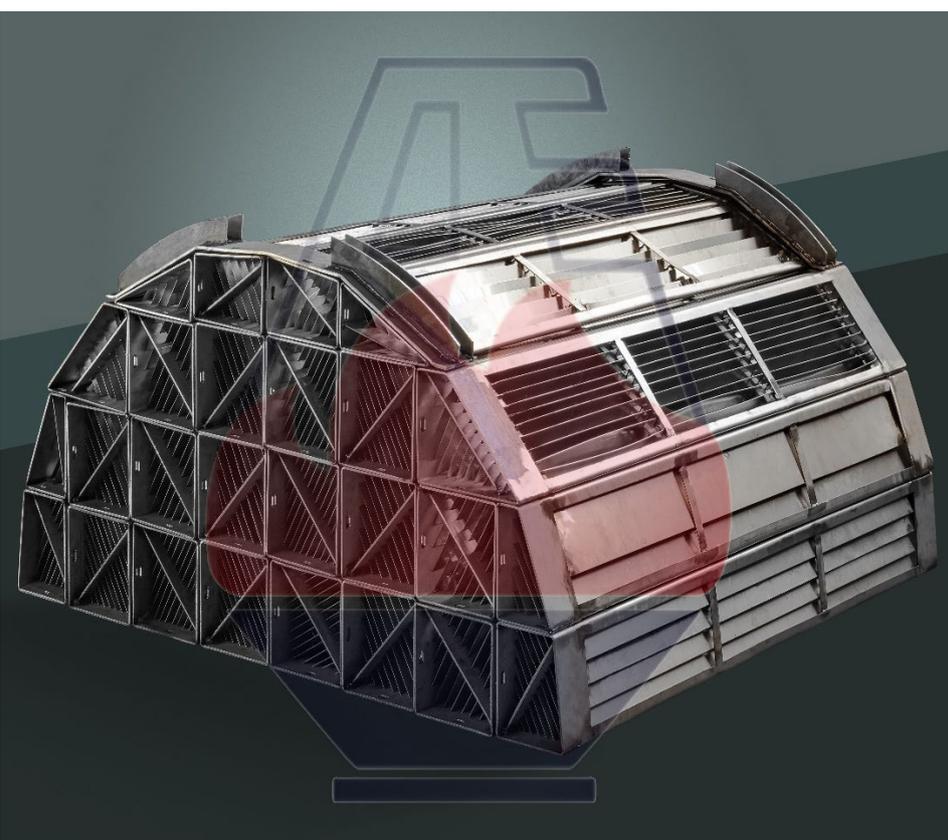


# LIQUID-LIQUID COALESCER



CHEM GROUP  
AZAR ENERGY Co.

Azar Energy's liquid-liquid separation technology can solve a wide range of separation problems involving immiscible liquids. Azar Energy offers different types of coalescer media and has solutions for even the most difficult to separate applications. For new applications or for retrofits, we can provide cost-effective solutions for your liquid-liquid separation requirements.

## Benefits of Liquid-Liquid Coalescers

- Reduce the size of new liquid-liquid separator vessels
- Improve product purity
- Reduce downstream corrosion
- Reduce loss of valuable products such as catalyst, amine and glycol
- Increase capacity of existing drums

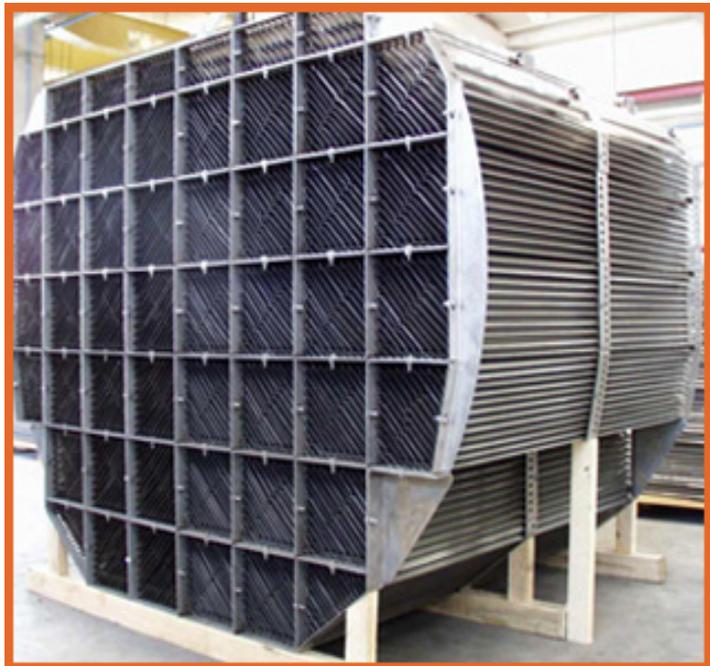
## Applications

- Oil-water separations
- Removing haze from distillates
- Product separation after product washing to remove water, salts, and caustic
- Refinery alkylation processes in main settler and effluent treating system
- Glycol and amine towers
- Wastewater treatment
- Three phase separations

When gravity forces alone do not produce an efficient separation of immiscible fluids, adding a liquid-liquid coalescer system can improve separation efficiency. High separation efficiency can result in only a few parts per million (ppm) liquid dispersion in the liquid effluent stream.

## Materials of Construction

All stainless steel series 300 and 400  
Alloys 200, 400, 600, 800  
Alloy 20  
Aluminum  
Copper  
Titanium  
And more . . .



# Types of Liquid-Liquid Coalescers

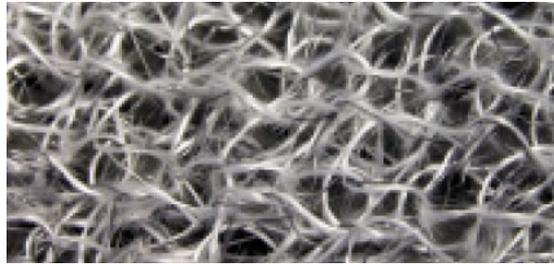
Azar Energy offers a range of coalescers designed to accelerate the separation of either primary or secondary immiscible liquid dispersions. Today, coalescers are often considered preferable to conventional gravity separators.

## 1. CO-KNIT MESH COALESCER

Our Mesh Coalescer Technology provides significantly lower settling times for primary dispersions with droplets as small as 30 microns.

### Technology

While the droplets pass through the CO-KNIT Mesh Coalescer they grow in size by a continuous process of coalescing and draining. The faster settling velocity of coalesced droplets leads to minimized vessel dimensions compared to simple gravity separation.



CO-KNIT MESH COALESCER

### Design

Azar Energy Mesh Coalescers can be installed both vertically and horizontally. Their shape and fixing method is customized to the vessel or housing. A wide variety of materials and knitting types offer a tailor-made solution wherever efficient liquid-liquid separation is required.

### Main benefits

- Enable debottlenecking of existing settlers
- Reduction in size of 2-phase and 3-phase separators
- Improves phase separation efficiency
- Depending on the Mesh Coalescer type and application, high separation fluxes of up to 120 m<sup>3</sup>/m<sup>2</sup>h are possible
- Applicable for primary dispersions
- Equal performance independent of dispersed phase

### Main applications

- Separation of dispersions remained after water washing stages
- Entrainment reduction of both phases in liquid-liquid extraction columns such as LPG amine treaters, hydrogen peroxide and caustic washers
- Separation of dispersions formed by condensation following azeotropic distillation as in butanol / water distillation
- Separation of liquids following steam stripping

## 2. Mellaplate Coalescer

The Mellaplate Coalescer consists of a set of parallel plates or sheet metals that are either flat or corrugated. The separation process is enhanced by reducing the droplet settling distance.

### Azar Energy Mellaplate Types

	Mellaplate PP	Mellaplate CM
Construction Form	Parallel Plates	Corrugated Plates
Relative Capacity <sup>1</sup>	1	1.5
Typical droplet cut-off size	$\geq 50 \mu\text{m}$	$\geq 100 \mu\text{m}$
Pressure drop	Negligible	0.5 – 4 mbar
Solids Handling	High fouling resistance	Good to high fouling resistance

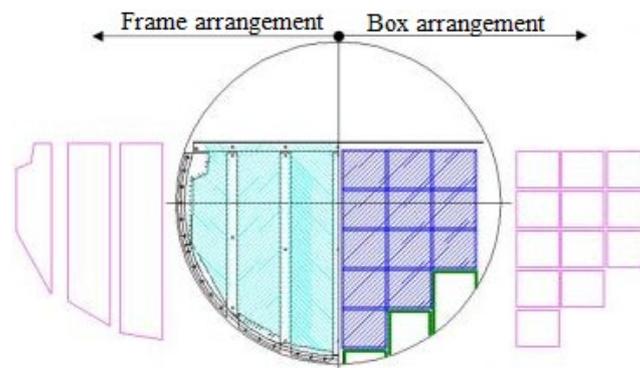
1) Values are relative to Mellaplate PP type

### Azar Energy Mellaplate W

This type of coalescer has a combination of inclined parallel plates with fixed spacing, thus reducing the droplet settling distance significantly, and enhancing the coalescence process. This separator is developed for applications where an improvement in the performance of gravity settlers is required. The inclined plate arrangement allows the liquid phases to disengage diagonally towards the liquid interface. Normally, the flow between the plates is kept in the laminar region for better separation performance. The inclination and the spacing between the plates are fixed depending on the application, the nature of contaminants present in the mixture, and degree of separation needed.

Typically, the angle is either 45° or 60° with plate spacing from 15 to 100 mm. Due to the high fouling resistance; the Mellaplate PP is, for example, used in crude oil production separators. It is also ideal for retrofitting an existing gravity settler to operate at a higher throughput and improve the separation performance.

From the construction point the Mellaplate PP can be made in modular frame arrangement or boxes for easy installation through the manway.



Azar Energy Mellaplate W - frame and box arrangement

# Azar Energy Mellaplate CM

This type of coalescer is made of structured corrugated metal sheets.



Azar Energy Mellaplate CM coalescer

Various universities and oil companies tested Mellaplate CM type in oil/water separators also under moving conditions.