Delta G™ Parallel Plate Separators

Solids/Liquid & Liquid/Liquid Particle Separation

When you are considering a clarifier, lamella, or separator, a Smith & Loveless **DELTA-G**™ Separation System may be the most cost-effective equipment you can select.

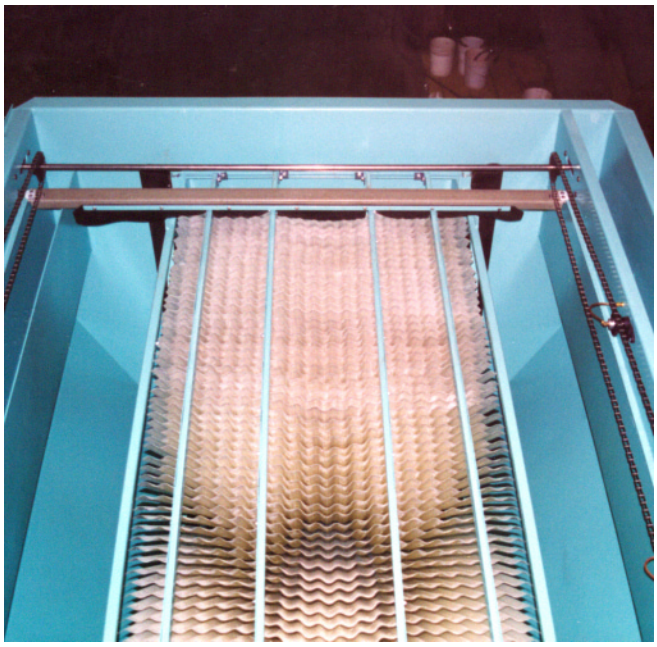
The separation of particles from a liquid flow is not complex when the entire range of ancillary equipment and options is available to the designer. Smith & Loveless is one of the largest manufacturer of factory-built water/wastewater transfer and treatment equipment in the world. We are a pioneer in prefabricated treatment plants, and have over 50 years of experience. In addition, we have tens of thousands of plants in operation.

Features and Benefits: DELTA-G™ Separators:

1. Ship completely factory built and tested. No field assembly required.
2. Provide dual phase particle removal. Both rising and settling particles are removed simultaneously with equal efficiency.
3. Offer more capacity per equipment size than all other separators, without exception.
4. Are available in single vessel capacities up to 9.0 MGD.
5. Are economically priced – a cost-effective particulate removal answer for limited spaces
6. Can be leased to qualified customers.

Application Engineering Considerations

Solids Separation and Oil/Water Separation: The most fundamental type of process treatment involves a flow stream containing only rising and/or settling particles with sufficient separation velocities. The **DELTA-G**™ Separator is used to remove particles that settle to the bottom of a vessel. It is also used to remove particles that rise to the top. If the flow stream contains both rising and settling particles, the **DELTA-G**™ Separator simultaneously removes both kinds of particles with equal efficiency, without favoring either type of particle.



Flocculator/Separator

In the case of the small particles, chemical pretreatment followed by flocculation is necessary to agglomerate the particles. This agglomeration makes them significantly larger. These large particles may exhibit settling characteristics permitting removal by using a **DELTA-G**™ Separation System consisting of chemical feed. Flocculation, and separation.

Dissolved Air Flotation

When particles exhibit neutral gravity, the **DELTA-G**™ Separator system utilizes a DAF(Dissolved Air Flotation). The use of DAF works to float the particles to the surface of the liquid. In the DAF option, air saturated recycled water under elevated pressure is distributed in front of a **DELTA-G**™ Separator. Excess air "boils" out of the water once the pressure is reduced to gravity conditions. These micron sized air particles then become available to attach onto the neutral gravity particles. Once attached, these particles exhibit excellent rise rates because their differential gravity has been significantly increased.

Flocculator/DAF Separator

If the particles are not large enough to permit sufficient contact between them and the DAF air particles, the requirement is to make the small particles larger. A **DELTA-G**™ Separator System consisting of chemical feed, flocculation, DAF, recycle module and separator will be necessary for this application.

Separator/DAF Separator

If the flow stream contains both settling particles and neutral gravity particles, the **DELTA-G**™ Separation System will consist of a first stage separator to remove the settling particles followed by a DAF separator to remove the neutral gravity particles. Any attempt to short circuit this two-stage separation process with a single stage DAF separator could result in the heavy particles becoming neutral gravity particles due to the attached air. A **DELTA-G**™ Separation System consisting of a separator followed by a DAF Separator will be necessary for this application.

Basic Operation

The **DELTA-G**™'s are unique since they were modified to be physically located in a low overhead area. The **DELTA-G**™'s have an automatic sludge blowdown system for sludge filter press dewatering, and the plate packs are removable for maintenance/cleaning. Cleaning occurs with a service water hose.

Suspended solid discharge of the **DELTA-G**™ ranges from 15 – 30 PPM, and filterable metals is typically below detectable limits. Polishing pressure filters are used prior to effluent discharge.

The **DI-SEP**® multimedia pressure filters alternate in operation. A pump suction well uses level, controlls and is monitored to control the pressurization pump to the filters. This maintains a consistent pressure on the filter bed to prevent channeling.

The filters use clean water for backwash, and plant air for air scour. Backwash is automatic by use of reliable differential pressure meters.

SMITH & LOVELESS INC.
Innovators for global pumping, water and wastewater treatment

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